U.S. DEPARTMENT OF COMMERCE
National Technical Information Service

PB-274 411

Conservation Districts and 208 Water Quality Management Non-Point Source Identification and Assessment Selection of Best Management Practices Management Agencies, Regulatory Programs

National Association of Conservation Districts, Washington, D.C.

Prepared for

Environmental Protection Agency, Washington, D.C.

Jun 77

PB 274 411

REPRODUCED BY
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INFORMATION SERVICE
U. S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

i

BIBLIOGRAPHIC DATA SHEET

1. Report No.

2.

3. Recipient's Accession No. PB274411

4. Title and Subtitle Conservation Districts and Water Quality Management-NPS Idenification and Assessment, Selection of BMP, Management Agencies, Regulatory Programs

5. Report Date June 1977

6. Date Published

7. Author(s) William B. Davey

8. Performing Organization Rept. No. ------

9. Performing Organization Name and Address
National Association of Conservation Districts
1025 Vermont Avenue, NW
Washington, D.C. 20005

10. Project/Task/Work Unit No.

11. Contract/Grant No. T 90057401-0

12. Sponsoring Organization Name and Address
U. S. Environmental Protection Agency
401 M Street S.W.
Washington, D.C. 20460

13. Type of Report & Period Covered Final - June 1977

14. EPA/700/01

15. Supplementary Notes Prepared in cooperation with Soil Conservation Service, other USDA Agencies, Bureau of Land Management, and several Conservation and Evironmental Organization.

16. Abstracts This publication highlights potential conservation district involvement in the preparation and implementation of state and areawide water quality management plans developed pursuant to Section 208 of Federal Water Pollution Control Act Amendments of 1972 (P. L. 92-500). It is keyed to the required water quality management planning elements specified in Environmental Protection Agency regulations (40 CFR Part 131.11, elements (a) through (p)).

The document is directed primarily to water quality planners, conservation districts, and state soil conservation agencies (boards, commissions, committees, counsils, or equivalent). Those federal and state agencies with whom conservation districts have cooperative working arrangements as well as various public interest groups may also find the material of interest.

17. Key Words and Document Analysis. 17a. Descriptors Barnlot Wastes, Best technology, Earth Resources Economic Analysis, Effluents, Environmental management, Enviromental pollution, Environmental protection, Enviromental quality, Erosin, Erosin control, Farm, Federal Water Pollution Control Act Amendments of 1972, Feedlot wastes, Land pollution, Pollution abatement Sediments, Soil Conservation, Soil Erosin, Water Erosin, Water pollution Control, Water quality.

17b. Identifiers/Open-Ended Terms

17c. COSATI Field/Group

18. Availability Statement Release Unlimited

Not available from other sources

19. Security Class (This Report) UNCLASSIFIED

20. Security Class (This Page) UNCLASSIFIED

21. No. of Pages 353

22. Price PCA16 / MF A01

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CONSERVATION DISTRICTS

AND

208 WATER QUALITY MANAGEMENT

*Non-Point Source Identification and Assessment
*Selection of Best Management Practices
*Management Agencies
*Regulatory Programs

BY

WILLIAM B. DAVEY

Prepared by the National Association of Conservation Districts under Environmental Protection Agency Grant No. T90057401-0.

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208 WATER QUALITY PROJECT

NATIONAL ASSOCIATION OF CONSERVATION DISTRICTS

The National Association of Conservation Districts (NACD) is a private, non-profit organization which represents the 3,000 soil and water and resource conservation districts and their state associations in the 50 states, Puerto Rico, and the Virgin Islands.

NACD and the U.S. Environmental Protection Agency joined together in a cooperative project to foster close working relationships between soil conservationists and water quality officials in developing a program of non-point pollution control that will be effective and acceptable to all concerned.

This publication was prepared as a part of NACD's 208 Water Quality Project.

David G. Unger--Executive Vice President
Robert E. Williams--Director of Special Projects
William B. Davey--Consultant
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FOREWORD

This publication was prepared by the National Association of Conservation Districts (NACD) at the request of and under a grant from the Environmental Protection Agency (EPA).

In published regulations and various other statements, EPA has articulated its policy that existing local entities, such as conservation districts, should play a leading role in helping to develop and implement state and areawide water quality management plans.

Conservation districts have had nearly 40 years experience in planning and carrying out land, water, and related resource programs. They clearly are in a position to help with several key portions of the "208" task that relate to non-point sources of pollution.

It was in this setting that EPA and NACD concluded that it would be timely and mutually beneficial to develop a document to aid state and areawide 208 planners, state soil conservation agencies, and conservation districts address a variety of non-point source pollution concerns.

The establishment of effective 208/conservation district working relationships would aid materially in developing and implementing sound water quality management plans designed to reach the water quality goals of the Federal Water Pollution Control Act Amendments of 1972.

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ACKNOWLEDGEMENTS

This document was prepared drawing on information supplied by a variety of federal and state agencies; 208 planners; and many associations, organizations, and individuals.

The assistance of all who contributed ideas and materials and who aided in the review is gratefully acknowledged.

Especially helpful were the participants in a meeting held in January, 1977, when the document was in the early draft stage. Represented at this session were the American Forestry Association, American National Cattlemens Association, Agricultural Research Service, Agricultural Stabilization and Conservation Service, Association of State Soil Conservation Administrative Officers, Bureau of Land Management, Environmental Protection Agency, Extension Service, Florida Department of Environmental Regulation, Forest Service, League of Women Voters, National Association of Counties, National Association of Home Builders, National Forest Products Association, National League of Cities, National Milk Producers Federation, Natural Resources Defense Council, South Dakota Sixth District Planning Commission, Soil Conservation Service, Texas State Soil and Water Conservation Board, and Wisconsin Board of Soil and Water Conservation Districts.

SUMMARY

PURPOSE

This publication highlights potential conservation district involvement in the preparation and implementation of state and areawide water quality management plans developed pursuant to Section 208 of the Federal Water Pollution Control Act Amendments of 1972 (P.L. 92-500). It is keyed to the 16 required water quality management planning elements specified in Environmental Protection Agency regulations (40 CFR Part 131.11, elements (a) through (p)).

APPLICABILITY

The document is directed primarily to water quality planners, conservation districts, and state soil conservation agencies (boards, commissions, committees, councils, or equivalent). Those federal and state agencies with whom conservation districts have cooperative working arrangements as well as various public interest groups may also find the material of interest.

STATE AND AREAWIDE WATER QUALITY MANAGEMENT PLANS

Section 208 has generated an intense and comprehensive planning effort designed to help meet the objectives of P.L. 92-500. A key effort is the preparation of water quality management plans which the Environmental Protection Agency indicates should be directed to meet two principal mandates of the Act: (1) The determination of effluent limitations needed to meet applicable water quality standards including the requirement to at least maintain existing water quality (Section 303); and (2) Development of state and areawide management programs to implement abatement measures for all pollutant sources (Section 208).

The plans, covering both point and non-point source pollution together with needed controls and implementing agency designations, are to be submitted to EPA for review and approval no later than November 1, 1978.

In its various issuances EPA has recognized that: (1) The basic approach to non-point source pollution control is one of prevention, and (2) Local entities such as conservation districts should assume a leading role in planning and implementing the programs.

CONSERVATION DISTRICTS

Conservation districts are uniquely equipped to help plan, manage, and implement portions of the state and areawide water quality management plans, particularly those related to the non-point pollution source aspects of erosion and sediment control, animal waste management (organics), and irrigation water management (salts). Under their assigned responsibilities, they have not only perfected working arrangements with a host of federal and state agencies, institutions, and groups, but have developed a widespread and effective delivery system as well.

Conservation districts are legal subdivisions of state government, responsible under state law for conservation work within their boundaries just as townships and counties are responsible for roads and other services and school districts are responsible for education. Boundaries are usually drawn along county lines (including one or more counties). Some have smaller areas or are organized along watershed lines.

Although provisions of the state laws vary, the purposes of districts are similar everywhere: to focus attention on land, water, and related resource problems; to develop programs to solve them; and to enlist and coordinate help from all public and private sources that can contribute to accomplishing the district goals.

In each state, assistance is provided to conservation districts by a state soil conservation agency (board, commission, council, or committee). This agency of state government is responsible for helping to organize districts, coordinating their activities, providing them with financial and other aid, and informing the public about the program.

Districts are managed by citizens who know local problems. In most states, members of the governing body are called supervisors; in some their title is director or commissioner. Usually, a district has from five to seven officials. Often, several are elected and the others appointed by the state agency. In other cases, they are all elected or appointed through various procedures. Currently, about 17,000 men and women are serving as district officials.

Operating funds are mostly drawn from local and state appropriations and contributions of individuals and organizations. This money--currently amounting to over $116 million each year--is used for administrative expenses, educational programs, local shares of cooperative projects, and acceleration of soil and other resource surveys.

Districts work in two ways to carry out their program responsibilities. First, they give expert assistance to individual landowners, groups, and units of government in planning and installing scientific land and water protection systems; and second, they initiate and carry out community-wide programs where required.

While some districts have their own technicians, they also rely on the personnel and facilities of several federal and state agencies for trained manpower. Many federal agencies cooperate with districts, including the Agricultural Research Service, Agricultural Stabilization and Conservation Service, Bureau of Land Management, Corps of Engineers, Extension Service, Fish and Wildlife Service, Forest Service, Soil Conservation Service, and others. Districts also work with many state departments such as forestry, agriculture, recreation, highways, education, fish and game, health, and commerce; and the land grant universities.

Districts retain local direction and control over their programs through written memorandums of understanding with their cooperating agencies which spell out working relationships and how each partner will function.

SCOPE

The Introduction outlines the purpose, applicability, and scope of the publication. In addition, the basic authorities and responsibilities relating to Section 208 and conservation districts are discussed and an overview chart depicting conservation district program applicability to non-point pollution source categories and associated pollutants is included.

Chapter One describes conservation district programs for water quality management. It is designed to better acquaint water quality planners with district activities in this field and with the relationships between relevant resource information, technical materials, and operating procedures and the 208 water quality management planning effort.

A series of tables show district program coverage by kinds and sources of pollutants along with the applicable soil and water conservation measures and their contribution to pollution abatement. The tables include information for sediment, plant nutrient, organic waste, mineral salt, toxic substance, disease organism, plant, animal pest, landscape, heat, and air pollutants.

Conservation district/cooperating agency working arrangements are covered and examples given. The major district program components of research, education, technical assistance, cost sharing, and credit are presented with brief descriptions of the agency activities associated with each component.

Certain technical assistance features of three cooperating federal agencies (Soil Conservation Service, Forest Service, Bureau of Land Management) are discussed in some detail. Included are examples of the technical guides and standards, resource information, practice standards and specifications, and planning and application assistance available through conservation districts. These materials along with the associated operating procedures provide a direct linkage to a number of the 208 non-point source pollution tasks, including problem identification, evaluation and assessment, identification and selection of best management practices, control needs, and implementation.

Chapters Two through Seventeen focus on the 16 required water quality management planning elements (40 CFR Part 131.11 (a) through (p)) presenting potential conservation district involvement in each. Special emphasis is placed on those elements in which conservation districts are in a position to play a major role.

Chapter Five--Element (d)--Non-Point Source Assessment. A section on problem identification is presented along with a discussion of kinds and sources of pollutants (photo examples), inventory and evaluation indicators, applicable resource information, and quantification/ assessment procedures and data.

Chapter Eleven--Element (j)--Non-Point Source Control Needs. This chapter contains a discussion of best management practices (with photo examples) and sections on their identification and quantification. Also presented is information on evaluations including measures applied, time required to achieve controls, incentives/disincentives, and cost/benefit considerations.

Chapter Fourteen--Element (m)--Target Abatement Dates. Discussions concerning establishing and achieving target abatement dates is the subject of this chapter.

Chapter Fifteen--Element (n)--Regulatory Programs. Alternative non-point source program structures are discussed in this chapter, centering on (a) a voluntary program and (b) a regulatory program containing a suggested framework structure and possible program variations and standards.

Chapter Sixteen--Element (o)--Management Agencies. Conservation district capabilities for implementing portions of the state and areawide water quality management plans are highlighted in this chapter.

Lastly, Chapter Eighteen presents a framework guide for developing a non-point source pollution control program for sediment, organic (animal waste), and mineral salt (irrigation) pollutants. A task force approach is suggested including step-by-step procedures for both state and local levels. Items to be considered are covered and suggested procedures are shown from the initial work through program formulation and implementation efforts.

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INTRODUCTION

PURPOSE

The purpose of this publication is to show potential conservation district involvement in the preparation and implementation of state and areawide water quality management plans developed pursuant to Section 208 of the Federal Water Pollution Control Act Amendments of 1972 (P.L. 92-500).

The publication emphasizes the non-point pollution source aspects of erosion and sediment control, animal waste management (organics), and irrigation water management (salts), but other information is included concerning the preparation of management plans which EPA indicates should be directed to meet two principal mandates of the Act: (1) The determination of effluent limitations needed to meet applicable water quality standards including the requirement to at least maintain existing water quality (Section 303); and (2) Development of state and areawide management programs to implement abatement measures for all pollutant sources (Section 208).

The information contained in this publication is simply descriptive of conservation district capabilities and the potential participation of conservation districts in water quality management planning and implementation. It is recognized that in some states and areas water quality management planning efforts may be relatively well advanced, with work completed or underway beyond some of the suggestions and discussions contained in this document. Many of the suggestions in this publication reflect experiences of planning agenices and conservation districts in such areas. No "back-up" or "redirection" is implied or should be construed.

APPLICABILITY

This publication is directed primarily to state or areawide agencies responsible for developing state water quality management plans, to state soil conservation agencies, and to conservation districts.

Since states may delegate their responsibilities for developing and implementing parts of their water programs to local, regional, sub-state, interstate, and federal agencies, this document may also be useful to these entities. In addition, those federal, state, local, and other agencies with whom conservation districts have working arrangements may find this material of interest.

SCOPE

Final regulations were issued by the U.S. Environmental Protection Agency on November 29, 1975 (Federal Register, Vol. 40, No. 230), specifying procedural and other requirements for the preparation of water quality management plans to be developed by state and designated areawide planning agencies pursuant to Section 208 of P.L. 92-500. Subpart B of Part 131 of the regulations describes the required content of water quality management plans and lists 16 required planning elements to which this document is keyed. The plans, covering both point and non-point source pollution together with needed controls and implementing agency designations, are to be submitted to the Environmental Protection Agency for review and approval no later than November 1, 1978.

Chapter One is designed to better acquaint water quality planners and others with conservation district activities in water quality management. A discussion of relevant resource information, technical materials, and operating procedures is also included.

Chapters Two through Seventeen focus on the required planning elements [Part 131.11 (a) through (p)] presenting the potential involvement of conservation districts in each element. Data sources, methodology, and other materials are included.

Chapter Eighteen, the final chapter, presents a framework guide for developing a non-point source pollution control program for sediments, organics (animal wastes), and salts (irrigation).

As a convenience to users of this document, the Federal Register notice concerning Parts 130 and 131 is included as Appendix I-1.

BASIC 208 AUTHORITIES AND RESPONSIBILITIES

The overall objective of the Federal Water Pollution Control Act Amendments of 1972 is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters" [Section 101 (a)]. The Act further states: "It is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1 1983" [Section 101 (a)(2)].

As a means of meeting these objectives, the Act states. "It is the national policy that areawide waste treatment management processes be developed and implemented to assure adequate control of sources of pollutants in each State" [Section 101 (a) (5)].

Section 208, which interfaces with a number of other sections of the Act (notably Sections 201, 303, and 402), is one of the basic tools in achieving the Act's objectives by providing a process mechanism for planning, implementing, and coordinating the various point and non-point source pollution controls.

The regulations contained in 40 CFR Parts 130 and 131 set forth the requirements for the development of the state continuing planning process and preparation of state and areawide water quality management plans. Recent revisions of these regulations reflect the increasing emphasis on management of non-point sources and serve to clarify the state planning responsibilities under Section 208 as well as Section 303 of the Act.

The broad goals of the continuing planning process are to assure that the necessary institutional arrangements and management programs are established to make and implement coordinated decisions designed to achieve water quality goals and standards; to develop a statewide (state and areawide) water quality assessment; establish water quality goals and state water quality standards which take into account overall state and local policies and programs, including those for land use and other related natural resources; and to provide the strategic guidance for developing the annual state program submittal under Section 106 of the Act. Specific outputs of the continuing planning process are the state strategy, the state/EPA agreement on timing and level of detail, the annual state program plan, and individual state and areawide water quality management plans.

The state strategy is to set major objectives and priorities for preventing and controlling pollution over a five-year period. The strategy will be annually reviewed and revised where necessary. The state/EPA agreement on timing and level of detail will serve as a generalized work plan to schedule planning efforts and focus these efforts on areas where water quality problems exist. The revised regulations provide for state adoption of functionally discrete portions of the state water quality management plans as each portion is completed. Thus, the state/EPA agreement will schedule the tasks necessary to expand Phase I basin plans to Phase II state and areawide water quality management plans to provide for meeting the 1983 goals of the Act. The initial state/EPA agreement for Phase II plans is to be completed within 150 days of promulgation of the final amendments to the regulations (April 26, 1976). All initial Phase II plans are to be completed by November 1, 1978.

The annual state program establishes the program objectives, identifies the resources committed for the state program each year, and establishes a mechanism for reporting progress toward achievement of program objectives.

State and areawide water quality management plans form a basis for implementing applicable point and non-point source controls needed to achieve the requirements of the Act. These plans consist of the following elements:

(a) Planning boundaries
(b) Water quality assessment and segment classification
(c) Inventories and projections
(d) Non-point source assessment
(e) Water quality standards
(f) Total maximum daily loads
(g) Point source load allocations
(h) Municipal waste treatment system needs
(i) Industrial waste treatment system needs
(j) Non-point source control needs

(k) Residual waste control needs; land disposal needs
(l) Urban and industrial stormwater needs
(m) Target abatement dates
(n) Regulatory programs
(o) Management agencies
(p) Environmental, social, economic impact

Planning areas may be defined on a statewide, basin, sub-basin or political jurisdiction basis and are normally subdivided into segments which are geographically discrete portions of water bodies. The water quality condition of each segment will be assessed. Segments will be classified as effluent limited if water quality standards will be met with the application of the effluent limitations required by Section 301 (b) (2) (A) and (B) of the Act. All other segments are to be classified as water quality segments.

A ranking of all municipal point source dischargers is required and is to be used to develop the municipal facilities project priority list. This will focus attention on the most serious municipal point source problems in each planning area. Demographic, economic, land use, and wasteload projections are to be used to predict potential problem areas over the 20-year planning period. An assessment of all non-point sources by category is required throughout the state. Planning for non-point source controls is not required for specific areas where the state can certify that a particular non-point source category does not contribute to water quality degradation.

During Phase II planning, water quality standards will be revised to reflect the 1983 goals of the Act. A method for implementing the state antidegradation policy will be required. Water quality standards revisions must be completed by July 1, 1977, to provide appropriate water quality objectives for planning and implementation of other program elements.

A total maximum daily load is to be established for each pollutant violating water quality criteria values in each water quality segment (including a safety factor to cover uncertainties in the process). Portions of these maximum daily loads will be allocated to point source dischargers and regulated through the National Pollutant Discharge Elimination System (NPDES) permit system. In the case of non-point sources an effort will be made to develop the appropriate level of reduction from non-point source contributors and to establish and apply best management practices to effect this reduction.

Each state water quality management plan must identify the necessary controls and costs relating to municipal and industrial point sources, non-point sources, residual wastes, land disposal, and urban and industrial storm water sources. Schedules of compliance or target dates of abatement must be established for each pollutant source or category of sources. Appropriate regulatory programs must be identified and implementing and operating agencies must be established to ensure that all portions of the plan are carried out. The plan must also include an assessment of the social, economic, and environmental impacts of carrying out the plan.

In its November 1976 Guidelines for State and Areawide Program Development, the Environmental Protection Agency points out that the sixteen required elements of the plans listed above form two major program components: analysis (elements a-g) and action (elements h-p). In addition an impact evaluation is required (element p). It should be noted that non-point source pollution concerns are an integral part of the two major program components. Thus, analyses and evaluations of these sources are involved as well as determining control needs and providing for implementation.

The recognized non-point pollution source categories include:

Agricultural Activities
Silvicultural Activities
Mining Activities
Construction Activities
Urban Runoff
Hydrologic Modifications
Sources Affecting Groundwater
Residual Waste Disposal

BASIC CONSERVATION DISTRICT AUTHORITIES AND RESPONSIBILITIES

Conservation districts are legal subdivisions of state government, responsible under state law for conservation work within their boundaries just as townships and counties are responsible for roads and other services and school districts are responsible for education. About 3,000 conservation districts cover virtually all of the privately-owned land in the nation. In some states, districts encompass rural areas only, but in most states, both rural and urban lands are included. District boundaries are usually drawn along county lines (including one or more counties). Some have small areas or are organized along watershed lines.

Although provisions of the state laws vary, the purposes of districts are similar everywhere: to focus attention on land, water, and related resource problems; to develop programs to solve them; and to enlist and coordinate help form all public and private sources that can contribute towards accomplishing the district's goals.

In each state, assistance is provided to conservation districts by a state soil conservation agency (known as commission, council, board, or committee). This agency of state government is responsible for helping to organize districts, coordinating their activities, providing them with financial and other aid, and informing the public about the program.

Districts are managed by citizens who know local problems. In most states, members of the governing body are called supervisors; in some their title is director or commissioner. Usually, a district has from five to seven officials. Often, several are elected and the others appointed by the state agency. In other cases, they are all elected or appointed through various procedures. Currently, about 17,000 men and women are serving as district officials.

The responsibility of district officials is to plan and direct the program, obtain assistance, coordinate the help of government agencies, assign priority to resource development tasks, and serve as a community clearinghouse for information and services.

In every district, the officials inventory resource needs and problems and, using public and private assistance, analyze agricultural, economic, and other trends. This inventory forms the basis for a long range plan of action that records the facts about local resources and outlines what must be done to correct problems and develop resources for wider and better use.

To meet these goals, districts work in two ways: first, they give expert assistance to individual landowners in planning and installing scientific land use systems; and second, they inititate and carry out community-wide programs where required. Districts also participate actively in group projects and regional resource development programs that benefit citizens in widespread areas. These include watershed projects, economic development projects, river basin development, comprehensive planning, and environmental improvement programs.

While some districts have their own technicans, they also rely on the personnel and facilities of several federal and state agencies for trained manpower. Many federal agencies provide services, including resource-oriented agencies of the U.S. Departments of Agriculture and Interior and others.

Also working with districts are many state departments such as forestry, agriculture, recreation, highways, education, fish and game, health, and commerce and the land grant universities.

Districts retain local direction and control over their programs through written memorandums of understanding with their cooperating agencies which spell out working relatinships and how each partner will function.

A list of citations to state conservation district laws is contained in Appendix I-2.

CONSERVATION DISTRICT PROGRAMS/NON-POINT SOURCE CATEGORY RELATIONSHIPS

An overview of conservation district program coverage by non-point source pollution categories and associated pollutants is shown in Table I-1. An "x" in the pollutant columns indicates those pollutants normally associated with the source category. District program applicability is indicated by footnotes.

Sepcific program applicability is covered in other chapters of this publication.

Table I-1

Conservation Districts

and Non-Point Pollution Source Categories and Associated Pollutants

SOURCE CATEGORY	Sediment	Nutrients	Pesticides	Organic	Salinity	Pathogens	Thermal	Solids	Acids	Metals	Other Chemicals
Agriculture	x^1	x^{2ab}	x^{2ab}	x^1	x^1	x^{2a}	x				
Silviculture	x^1	x^{2ab}	x^{2b}	x			x				
Mining	x^1				x			x	x^{2a}	x^{2a}	
Construction	x^1	x^{2a}	x	x		x		x		x	x
Urban Runoff	x^1	x^{2a}	x	x		x		x		x	
Hydrologic Modifications	x^1	x^{2a}	x			x	x				x
Residual Wastes	x^1	x^{2a}	x	x		x		x		x	x

[1] Conservation district program directly applicable to control of pollutant

[2] Conservation district program applicable to control of pollutant by:
- a. Reducing transport of pollutant attached to sediments or by other reduction techniques.
- b. Providing advice and counsel on use and application

Source: Adapted from EPA Source Category BMP Papers, Supplement No.1, Guidelines for State and Areawide Water Quality Management Program Development, November 1976.

CHAPTER ONE

CONSERVATION DISTRICT PROGRAMS FOR WATER QUALITY MANAGEMENT

INTRODUCTION

This chapter is designed to better acquaint water quality planners and others with the activities of conservation districts in the water quality management field.

Included is a section on district program coverage by kinds and sources of pollution and the general types and degrees of assistance districts provide for each. Another section deals with district operations, covering district working arrangements which provide trained manpower, the technical guides undergirding the programs, and the service delivery aspects of conservation planning and application of conservation measures on the land.

An understanding of conservation district program coverage and the associated technical resource materials is particularly relevant to a number of jobs associated with the 208 effort. There is a direct link to many of the required 208 water quality management planning elements including inventories, assessments, problem identification, control needs, best management practices selection, and implementing agency considerations.

CONSERVATION DISTRICT PROGRAM COVERAGE BY KINDS AND SOURCES OF POLLUTANTS

The principal types of assistance available through conservation districts and their cooperating agencies for measures to reduce pollution are shown in Tables 1-1 to 1-9. The tables are adapted from USDA Soil Conservation Service materials.

Each table includes a brief description of a specific category of pollution and lists the kinds and sources of the pollutants, the soil and water conservation measures which control or reduce the pollution, and the general contribution of these measures to pollution abatement. These soil and water conservation measures, singly or in combination, often constitute best management practices for dealing with the following pollutant categories shown in the tables:

Sediment Pollutants
Plant Nutrient and Organic Waste Pollutants
Mineral Salt Pollutants
Toxic Substance Pollutants
Disease Organism Pollutants
Plant or Animal Pest Pollutants
Landscape Pollutants
Heat Pollutants
Air Pollutants

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It is recognized that there may be many measures other than those listed in the tables which can be used to abate pollution. The measures included are those which will conserve or develop a soil, water, or related resource.

Except as otherwise noted on Tables 1-1 to 1-9, conservation district assistance for these soil and water conservation measures affecting the control of pollution includes the following major elements:

Public Information and Education Assistance: Informing and educating the public about resource management through the media, schools, civic forums, and other organizations.

Inventory and Evaluation Assistance: Providing basic inventory data such as soil surveys, hydrologic data, vegetative information, and other technical data and interpretations and evaluations of these data.

Planning Assistance: Providing technical assistance to land users in determining alternative land uses and treatment needs and assisting in development of a conservation plan reflecting the specific land use and treatment decisions.

Application Assistance: Providing technical assistance to cooperating land users to help them install planned conservation practices which include engineering and vegetative measures. Assistance may include site investigations, designs and specifications, construction plans, layout of practices, and supervision of installation.

Table 1-1

CONSERVATION DISTRICTS AND SEDIMENT POLLUTANTS

Sediment is a pollutant affecting land, water, and air. In water, either in transport or in deposit, it damages aquatic habitat by smothering and shading food organisms, carries plant nutrients and toxic materials, destroys wildlife habitat, increases water treatment costs, and abrades and clogs water transport installations. Deposited on land, it poses a cleanup cost, damages buildings and equipment, and may lower soil productivity.

KINDS AND SOURCES OF SEDIMENT POLLUTANTS	SOIL AND WATER CONSERVATION MEASURES	CONTRIBUTION TO POLLUTION ABATEMENT
	Sediment can be controlled by preventing water erosion and soil blowing, through:	
Sheet, rill and gully erosion and landslides from farmland, rangeland, forests, and other lands.	1. Proper land use 2. Erosion Control measures on:	1 & 2. All soil and water conservation measures in these categories provide tangible pollution abatement benefit by reducing sediment production and movement
Airborne soil particles Erosion from construction site soil disturbances Suburban developments Industrial developments Utility routes	a. Farmland, rangeland, forests, stream channels, lakeshores, mined areas, mine dumps, etc.(e.g. through land treatment such as strip-cropping, windbreaks, shelterbelts, cover crops, vegetation, debris basins, irrigation, ditch and canal linings, terraces, grade stabilization structures, diversions, proper range management, etc.)	
Structural works of improvement Roads, trails, highways, railroads, airports Stream channels, lakeshores	b. Construction site disturbances such as roads, trails, highways, railroads, airports, suburban developments, utility routes, community facility development and other structural works of improvement.	
Mined areas, mine dumps	3. Good irrigation water management practices	3. Reduce sediment movement by conveying and distributing irrigation water at nonerosive velocities.
Other erosion sources Floodwater-borne sediment	4. Water management measures on streams (e.g. floodwater retarding dams and sediment traps)	4. Reduce sediment movement by trapping it in storage basins

Table 1-2

CONSERVATION DISTRICTS AND PLANT NUTRIENT AND ORGANIC WASTE POLLUTANTS

Plant nutrients are elements essential for plant growth. However, excessive amounts of nitrogen, phosphorus, or organic carbon are generally believed to be the main causes of overenrichment of streams and lakes, resulting in excessive growth of algae and aquatic plants. Water quality eventually deteriorates from lack of oxygen and putrefaction. Nitrogen and phosphorus occur in solution primarily as nitrates, phosphates, and organic compounds. High nitrates in drinking water may be hazardous to humans and animals. Animal wastes and plant residues are sources of organic compounds. Excessive amounts of these organics in water, causing discoloration and affecting taste and odor, degrade water quality.

KINDS AND SOURCES OF PLANT NUTRIENT AND ORGANIC WASTE POLLUTANTS	SOIL AND WATER CONSERVATION MEASURES	CONTRIBUTION TO POLLUTION ABATEMENT
	Plant nutrients and/or organic waste pollutants may be controlled or abated by such measures as:	
Fertilizers and soil amendments	1. Proper fertilization practices	1. Less fertilizer is carried into streams by surface runoff
Organic wastes Livestock	2. Irrigation water management	2. Proper design and operation reduces surface runoff and associated pollutants
Feedlots, corrals		
Dairy farms and milk houses	3. Irrigation system, tailwater	3. Maximum reuse of irrigation tailwater reduces contamination of other supplies
Hog farms		
Poultry farms	4. Collection, disposal, and treatment of crude organic wastes	
Crop residues		
Crop and livestock processing wastes	a. Use as fertilizers and soil amendments including irrigation with enriched effluent	4.a Use of soil and plants for utilization of waste
Wood products wastes	b. Debris basins or other catchment devices	b. Reduce discharge of pollutants into surface waters
Domestic sewage treatment plant effluent and sludge	c. Water control measures (diversions, drains, spreading)	c. Divert pollutants to points of safe storage treatment, or infiltration
Humates from plant litter, peat and marshland	d. Lagoons, holding ponds, and agricultural waste storage and management facilities for livestock and other agriculture-related wastes (including measures for spreading effluent on the land)	d. Reduce discharge of pollutants into surface and ground waste and into the atmosphere

Table 1-2 cont'd

KINDS AND SOURCES OF PLANT NUTRIENT AND ORGANIC WASTE POLLUTANTS	SOIL AND WATER CONSERVATION MEASURES	CONTRIBUTION TO POLLUTION ABATEMENT
	e. Lagoons for non-agricultural related wastes	e. Reduce discharge of pollutants into surface and ground waters and into the atmosphere
	f. Sanitary landfills	f. Reduce unsightly conditions and surface and ground water pollution
	g. Septic tank absorption fields for domestic sewage	g. Reduce surface and ground water pollution
	h. Proper grazing use and planned grazing systems.	h. Recycle animal wastes through grassland ecosystems
	5. Low-flow releases from impoundments	5. Increase oxygen supply, maintain aquatic environment
	6. Conservation cropping system	6. Increases infiltration; reduces discharge of nutrients
	7. Proper location of spreading treatment, and disposal areas with respect to water supplies, residences, etc.	7. Safeguards water supply Improves environment
	8. Erosion control, grass borders, etc.	8. Reduce erosion runoff and movement of pollutants

Table 1-3

CONSERVATION DISTRICTS AND MINERAL SALT POLLUTANTS

All natural waters contain some dissolved salts. These salts become objectionable when they occur in concentrations large enough to be corrosive, directly toxic to plants and animals or interfere with plant nutrition and metabolism, thereby impairing growth. Elements such as sodium, potassium, calcium, magnesium, aluminum, and iron my occur in water as sulfates, hydroxides, carbonates, bicarbonates, nitrates, chlorides, and borates. They damage aquatic habitat; and they increase water treatment costs and make water unusable for many purposes. They also may accumulate from improper water management and evaporation on irrigated soil and depress crop production.

KINDS AND SOURCES OF MINERAL SALT POLLUTANTS	SOIL & WATER CONSERVATION MEASURES	CONTRIBUTION TO POLLUTION ABATEMENT
	Mineral salt pollution can be controlled or abated by the following soil and water conservation measures or techniques:	
Leachates from saline soils (irrigation return flows)	1. Improved irrigation practices	1. Reduce discharges of mineral pollutantsinto surface water.
Garbage and refuse accumulations and related oil and chemical wastes Industrial wastes Construction materials (concrete, metal)	2. Evaporaton beds and transpiration areas a. Saline springs, mine drainage b. Industrial wastes, construction materials, road chemicals	2. Reduce discharges of mineral pollutantsinto surface water.
Road chemicals (deicing, dust laying) Saline springs and wells	3. Safe infiltration disposal area away from streams a. Saline springs, mine drainage b. Industrial wastes, construction materials, road chemicals	3. Reduce discharges of mineral pollutants into surface water
Mine drainage	4. Burial (landfill) a. Garbage and refuse accumulations b. Industrial wastes	4. Permits safe disposal of these pollutants under certain soil conditions
	5. Capping and plugging unused wells	5. Reduce pollutants that may reach ground water aquifers or adversely affect land and streams

Table 1-3 cont'd

KINDS AND SOURCES OF MINERAL SALT POLLUTANTS	SOIL & WATER CONSERVATION MEASURES	CONTRIBUTION TO POLLUTION ABATEMENT
	6. Low-flow releases	6. Reduce concentrations of mineral salts in water reaching downstream points.
	7. Use of salt tolerant plants	7. Results in additional vegetation

Table 1-4

CONSERVATION DISTRICTS AND TOXIC SUBSTANCE POLLUTANTS

Toxic materials are poisons which when improperly used may pollute air, water, and soil and adversely affect the quality of the environment. They may be in gas, liquid, or solid form.

KINDS AND SOURCES OF TOXIC SUBSTANCE POLLUTANTS	TECHNIQUES INVOLVED IN THE USE OF TOXIC SUBSTANCES	CONTRIBUTION TO POLLUTION ABATEMENT
	Toxic substances require special techniques in detection, use, and disposal, according to the nature of the substance and its possible impact on the environment. The following items point out the important factors in using toxic materials.	
Pesticides, including herbicides, fungicides, insecticides, rodenticides, etc.	1. Pesticides require: a. Careful application as to amounts and area in accordance with limitations stated on the label b. Protection of equipment operators	1. Prevent or reduce pollution from toxic materials
Paints, cleaners, oil, and grease	c. Neutralization, deactivation, and cleanup of spills d. Care in cleaning application equipment e. Adequate safe disposal of containers f. Safe storage and transport to avoid accidents	
	2. Paints, cleaners, oil and greases require: a. Control of drainage from treated surfaces b. Cleanup of spills, neutralization	2. Prevent or reduce pollution from toxic materials
	3. Radioactive substances require :	3. Prevent or reduce pollution from toxic materials
Accidental spills of industrial materials	a. Detection or monitoring	
Factory wastes and residues	b. Special decontamination procedures	

Table 1-4 cont'd

KINDS AND SOURCES OF TOXIC SUBSTANCE POLLUTANTS	TECHNIQUES INVOLVED IN THE USE OF TOXIC SUBSTANCES	CONTRIBUTION TO POLLUTION ABATEMENT
Lead emissions from internal combustion engines	Removal and safe disposal of accidentally contaminated materials	
Heavy metal such as zinc, copper, and cadmium	c. Sealed storage to outlast duration of dangerous level of radioactivity	
	d. Safe burial where there is no hazard to ground water	
Toxic substances such as arsenic, mercury, boron, and lead.	4. Accidental spills of toxic industrial materials require the same type of treatment as radioactive substances	4. Prevent or reduce pollution from toxic materials
	5. Herbicides require:	5. Prevent or reduce pollution from toxic materials
	a. Careful application as to amounts and area in accordance with limitations stated on the label	

Table 1-5

CONSERVATION DISTRICTS AND DISEASE ORGANISM POLLUTANTS

Disease organisms are often associated with other pollutants such as domestic sewage, animal wastes, or crop residues. They may contaminate air, water, or soil. They may be directly harmful to crops, livestock, or people.

KINDS AND SOURCES OF DISEASE ORGANISM POLLUTANTS	SOIL & WATER CONSERVATION MEASURES	CONTRIBUTION TO POLLUTION ABATEMENT
	Some disease organisms may be controlled by the following soil and water conservation measures:	
Viruses Bacteria, fungi, protozoa	1. Preventing soil from blowing	1. Reduces movement of infected soil particles
Nematodes, schistosomes	2. Removing host or alternate host plants	2. Eliminates infectious agents
	3. Agricultural water management (drainage, irrigation, and runoff control)	3. Controls vectors capable of transmitting infectious organisms
	4. Change in vegetative cover (crop rotation)	4. Eliminates host plants
	5. Suitable sites for absorption fields	5. Reduces likelihood of disease organisms being present in soil surface and being discharged into the atmosphere
	6. Use of resistant plant varieties	6. Reduces infectious agents
	7. Planned grazing system	7. Breaks life cycle of organisms
	8. Agricultural waste management	8. Reduces likelihood of disease organism being carried to surface waters and improves water control

Table 1-6

CONSERVATION DISTRICTS AND POLLUTANTS FROM PLANT OR ANIMAL PESTS

Pests are not usually thought of as pollutants but, from the standpoint of human welfare and enjoyment, they may be so classed. They may be nuisances or vectors for disease. They reduce crop and livestock yields and affect human health. Careful judgment is needed when classifying living organisms as pests. They may be useful and beneficial in some situations.

KINDS OF PESTS THAT MAY BE CLASSED AS POLLUTANTS	SOIL & WATER CONSERVATION MEASURES	CONTRIBUTION TO POLLUTION ABATEMENT
Plants Weeds Poisonous plants Fungi Algae and other aquatic plants Insects and arachnids Rodents	Pests may to some degree be controlled by design features of soil and water conservation measures such as:	
	1. Retarding or impounding structures with features designed to control pests.	1. Mitigate or eliminate insect-breeding areas and undesirable plant growth
	2. Drainage ditches and channels with features designed to control pests.	2. "
	3. Change in vegetation	3. "
	4. Irrigation water management	4. "
	5. Irrigation structures (fine mesh trash screens)	5. Prevent spread of weed seeds in irrigation water
	6. Improve irrigation practices Irrigation systems Irrigation land leveling Irrigation water management	6. Reduce or eliminate mosquito and other insect breeding areas
	7. Agricultural waste management facilities	7. Mitigate or eliminate insect-breeding areas Reduce fly population, and control other vectors
	8. Conservation cropping systems	8. Reduce insects and weeds

Table 1-7

CONSERVATION DISTRICTS AND LANDSCAPE POLLUTANTS

Landscape pollutants are those that degrade the landscape and spoil enjoyment of outdoor scenery, obstruct esthetic value and degrade property values in adjacent areas.

KINDS AND SOURCES OF LANDSCAPE POLLUTANTS	SOIL & WATER CONSERVATION MEASURES	CONSTIBUTION TO CONSERVATION ABATEMENT
Litter and refuse	Landscape pollutants may be controlled by the following soil and water conservation measures or their design features:	These measures contribute to the beauty of the countryside and enhance the quality of environment
Abandoned materials and structures		
Buildings and bridges		
	1. Cleanup and proper disposal of waste	
Equipment and machinery	2. Reclamation of useful materials	
	3. Vegetative screening	
Car bodies	4. Relocation of disposal areas	
Intrusion of construction on scenic views	5. Zoning against intrusions on adjacent areas	
	6. Resource conservation planning to promote planting of trees, shrubs, border plantings, etc.	
	7. Improved timber-waste disposal, e.g. slash disposal, screened cuttings.	
Poor timber-cutting practices	8. Preservation, establishment, or improvement of vegetation along streams	
Gullies and other unsightly erosion	9. Brush and weed control	
	10. Floodwater-retarding structures.	
Mine waste and tailings	11. Irrigation water management and other practices to control and adequately dispose of excess water	
Scour and overwash		

Table 1-7 cont'd

KINDS AND SOURCES OF LANDSCAPE POLLUTANTS	SOIL & WATER CONSERVATION MEASURES	CONTRIBUTION TO CONSERVATION ABATEMENT
Patches of weeds and other unsightly vegetation caused by excessive tailwater and/or over-irrigation and inadequate water disposal systems	12. Rural community planning	
Illegal or unmanaged dumps		

Table 1-8

CONSERVATION DISTRICTS AND HEAT POLLUTANTS

Heat is a pollutant primarily of concern in water. It may damage life forms or species in the aquatic habitat, thereby reducing most desirable productivity. It may also make water unusable for some purposes.

KINDS AND SOURCES OF HEAT POLLUTANTS	SOIL & WATER CONSERVATION MEASURES	CONTRIBUTION TO POLLUTION ABATEMENT
	Heat pollutants may be controlled or abated by the following soil and water conservation measures or their design features:	
Irrigation return flows Changes in ground cover, surface texture, color, or reflection	1. Irrigation water management: Better methods of application and tailwater recovery	1. Reduce return of warm water to the stream, or maintain more favorable temperature in the water applied
Warming of water in impoundments	2. Changes in ground surface conditions: Maintain vegetation cover, revegetate denuded areas	2. Reduce radiation and reflections
Warm water from power plants and other industrial plant cooling systems	3. Cold water releases from impoundments	3. Minimize thermal effects
	4. Recycling and aerating warm water through surface, subsurface, or sprinkler irrigation systems using appropriate irrigation water management techniques	4. Results in cooling due to recycling and aeration

Table 1-9

CONSERVATION DISTRICTS AND AIR POLLUTANTS

Specific air pollutants include some that could also be classed as landscape pollutants and some may, by fallout, become land and water pollutants. They may directly affect the health of plants, livestock, and people or damage buildings and equipment.

KINDS AND SOURCES OF AIR POLLUTANTS	SOIL & WATER CONSERVATION MEASURES	CONTRIBUTION TO POLLUTION ABATEMENT
Smoke Stubble and crop residue burning, forest slash burning, etc.	Air pollutants may be reduced in some degree by the following soil and water conservation measures or techniques:	
Refuse burning	1. Smoke	
Industrial plants, utilities, residences, commercial, etc. Gasoline and oil burning engines	a. Tillage and other practices to utilize stubble, crop residues; alternative disease and pest control methods; looping and scattering slash; improving utilization; shredding to a chip mulch	1. a. Eliminate burning and the resulting smoke
Airborne soil particles (dust) Noxious odors	b. Elimination of non-agricultural refuse burning by improved methods of reclaiming useful materials or stockpile as compost to make soil amendments	b. Eliminates smoke
Crop-processing dusts (organic) Allergens Plant pollens	c. Controlled burning (in accordance with local and state laws) and mechanical timber stand improvement practices	c. Reduce smoke
Dust from fur, feathers manures	2. Allergens Weed control & relocation of crops	2. Lessen amounts of allergens
Noise Farming, mining, and construction equipment	3. Noise Tree planting, field windbreak or border, critical area planting	3. Screen out noise
Highway, railroad, airplane Industry	4. Dust Minimum tillage, crop residue use, and conservation cropping system	4. Lessen dust
Recreation area (motorboat, snowmobile, etc.) Odors	5. Odors Proper management of livestock manure and other agricultural wastes.	5. Reduce odors.

CONSERVATION DISTRICT OPERATIONS

WORKING ARRANGEMENTS

While some districts have their own technicans, they also rely on the personnel and facilities of several federal and state agencies for trained manpower. The principal sources of assistance to conservation districts are shown in Table 1-10 (federal) and 1-11 (state).

The Soil Conservation Service of the U.S. Department of Agriculture (USDA) is the only agency receiving federal funds earmarked by Congress for direct technical assistance to conservation districts. Many other federal agencies provide services, including USDA's Agricultural Research Service, Agriculatural Stabilization and Conservation Service, Economic Research Service, Extension Service, Farmers Home Administration, and Forest Service and the U.S. Department of the Interior's Bureau of Land Management, Bureau of Land Management, Bureau of Reclamation, and Fish and Wildlife Service. Also working with districts are many state departments such as forestry, agriculture, recreation,highways, education, cooperative extension service, fish and game, health, and commerce and the land grant universities.

Districts retain local direction and control over their programs through various forms of agreement with their cooperating agencies which spell out working relationships and how each partner will function.

In the case of the U.S. Department of Agriculture, conservation districts execute and "umbrella" memorandum of understanding with USDA under which supplemental memorandums of understanding (or other appropriate arrangements) are developed between the district and each USDA agency cooperating with the district.

The Department of the Army Corps of Engineers provides a standard format for a memorandum of agreement between a district engineer and a conservation district. Under the Army directive, district engineers are authorized to sign the agreements and to make such modifications as deemed appropriate by the Corps and the conservation district.

Similar, although often less formal arrangements, are made by the district with other federal and state agencies. Examples of several agreements appear in Appendix 1-1.

MAJOR PROGRAM COMPONENTS

Conservation district programs encompass research, education, technical assistance, cost sharing, and credit as major components. These components, appropriately blended, serve as the basis for applying conservation technology to problems experienced by individual landowners, groups, units of government, and multi-county entities--problems of soil erosion, water management, urban expansion, waste disposal, highway and utility planning and maintenance, building construction, recreation facilities, and environmental improvement. In addition, district work involves active participation in projects and regional resource development efforts such as water resource projects, economic development projects, river basin development, and comprehensive planning programs.

Table 1-10: Principal Sources of Federal Assistance to Conservation Districts by Functions

	Research	Education	Technical Assistance	Cost Sharing	Credit
USDA:					
Agricultural Research Service (ARS)	x				
Agricultural Stabilization and Conservation Service (ASCS)				x	
Cooperative State Research Service (CSRS)	x				
Economic Research Service (ERS)	x				
Extension Service (ES)		x			
Farmers Home Administration (FmHA)					x
Forest Service (FS)	x		x		
Soil Conservation Service (SCS)			x	x[1]	
USDI:					
Bureau of Outdoor Recreation (BOR)			x	x[2]	
Bureau of Land Management (BLM)			x		
Bureau of Reclamation (BuRec)	x		x	x[3]	x[3]
Fish and Wildlife Service (FWS)	x	x	x		
Office of Water Resources Research (OWRR)	x				
Geological Survey (USGS)	x		x		
Other:					
Corps of Engineers (Corps)			x	x[3]	
Economic Development Administration (EDA)			x	x[3]	
Environmental Protection Agency (EPA)	x		x		
Water Resources Council (WRC)			x		
Small Business Administration (SBA)					x

[1] Also includes financial assistance for project undertakings

[2] Financial assistance for recreational developments

[3] Financial assistance for project works

Table 1-11: Principal Sources of State Assistance to Conservation Districts by Functions

	Research	Education	Technical Assistance	Cost Sharing	Credit
State Soil Conservation Agency		x	x	x	
Land Grant University					
State Experiment Station	x				
State Extension Service		x			
State Forestry Agency			x		
State Game and Fish Agency	x		x		
State Water Quality Agency	x		x		
State Planning Agency		x	x		
State Education Department		x			
State Water Resources Department	x		x	x	

District programs at the local level cover a wide variety of activities including such things as sponsorship of awards programs for students, teachers, outstanding cooperators, etc,; sale of tree seedlings; preparation and distribution of newsletter; development of outdoor classrooms and other educational activities; rental of land improvement equipment; sponsorship of Soil Stewardship Week; organization of conservation tours; and other community activities.

A short narrative concerning each of the major components follows.

Research

A substantial number of federal and state agencies and others conduct a variety of research programs which make an important contribution to the technical soundness of conservation district programs. Research also develops new technology and techniques for application to conservation problems.

Research designed to make more effective use of the productive capacity of soil and water resources is one of the missions of the Agricultural Research Service (ARS). Scientists and engineers conducting this research are concerned not only with preserving these resources, but also with keeping soil, water, and air relatively free from pollution. ARS and districts maintain a close working relationship using visits to the research stations and meetings and other forums for a free exchange on research results and needs.

The Cooperative State Research Service (CSRS) administers federal grant funds for research in agriculture, agricultural marketing, rural development, and forestry. Funds are made available to state agricultural experiment stations and other designated state institutions. The results of the ensuing research contribute toward improvement of district programs.

Forest and forest-related research is carried out by the Forest Service (FS) throughout the country, often in cooperation with state agricultural colleges. Research concerning tree planting, timber management and harvesting, fire protection, watershed management, and recreation are particularly relevant to district work.

The Economic Research Service (ERS) carries out a broad program of economic research. Among the analyses of interest to districts are those dealing with pricing and policy, structure, and adjustments in agriculture; long range projections; and costs and returns. Much of the ERS research is centered on the use, conservation, development, and control of natural resources and their contribution to local, regional, and national economic growth. Analysis of environmental issues is an important element of its responsibility.

The Bureau of Reclamation (BuRec) is authorized to conduct research programs on the use of water resources. Research results centering on dam construction and major irrigation distribution systems are especially important to districts.

Research is conducted by the Fish and Wildlife Service (FWS) on the conservation, development, and management of the nation's fish and wildlife resources. FWS's own research is complemented by cooperative fish and wildlife research units located at 45 universities. The research results are integrated into district assistance in this field.

The Office of Water Resources Research (OWRR) provides annual fund allotments to support one state university water resources research and training institute in each state and matching funds for certain specific project work. The problem-oriented research helps develop new technology for application in district work.

One of the broad objectives of the U.S. Geological Survey (USGS) is to conduct investigations and research covering the topography, geology, and mineral and water resources of the United States. Districts benefit substantially from USGS sedimentation studies and efforts to determine the source, quantity, quality, distribution, movement, and availability of both surface and ground water.

The Environmental Protection Agency (EPA) carries out a national research program in pursuit of technological controls for all forms of pollution. EPA maintains several national and other laboratories supporting the program responsibilities of its regional offices. EPA also supports technological reviews and other investigations. These results, coupled with research results (particularly in the non-point field), are of interest to districts.

Several state institutions contribute research results used in district programs. The state experiment stations of the land grant universities are a particularly important source of research information, with state forestry, fish and game, geology, economic, and other agencies also contributing relevant research results.

Lastly, a number of equipment companies and other industrial and private organizations conduct research and demonstrations which benefit district programs.

Education

While most federal and state agencies and private groups conduct information and education programs centering on their particular missions, conservation districts have generally relied on the Cooperative Extension Service as their principal source of educational aid.

The Extension Service (ES) is the educational agency of the U.S. Department of Agriculture. It is one of three partners making up the Cooperative Extension Service. State governments, through their land grant universities, and county governments are the other partners. All three share in financing, planning, and conducting Extension's education programs.

Extension agents, in addition to bringing research results from the land grant universities, have conducted educational programs in behalf of districts and have helped in the district organization process. They have been effective participants in developing district annual and long range programs and in informing and motivating land users to install soil and water conservation measures.

Technical Assistance

Technical assistance is the cornerstone of conservation district programs and is the basic ingredient of a voluntary approach to land, water, and related resource conservation work.

Through cooperative arrangements, districts use technical aid to combine the practical experience of land users with the scientific knowledge and skills of professional conservationists and others to develop and carry out locally-adapted conservation programs.

Soil Conservation Service (SCS) personnel are assigned to districts to work directly with land users. Assistance to district cooperators includes: providing a soil capability map and other resource data; providing information about practical alternatives for treating and using the land; assisting in developing a plan for installing the treatment measures and making the land use changes needed; and helping to apply parts of the plan that require special skills or knowledge.

The Forest Service (FS), working principally through state forestry agencies, is a valuable source of technical assistance to districts. Under the Cooperative Forest Fire Control Program, the Forest Service provides coordination and financial and technical assistance. The Forest Service also cooperates with the states in producing and distributing tree seeds and seedlings for planting on state and private forest lands. Federal and state technical assistance is provided to private forest landowners under the Cooperative Forest Management Act. Cooperative programs are also conducted as a part of certain watershed and flood prevention project activities. Lands associated with the National Forests frequently require cooperative efforts for use and treatment and coordinated planning efforts.

Resources managed and leased by the Bureau of Land Management (BLM) include timber, minerals, geothermal energy, wildlife habitat, livestock forage, recreation and cultural areas, and open space. Many of these resource areas are located within district boundaries and, when they occur on intermingled public and private lands, coordinated planning and technical assistance arrangements are needed.

The Bureau of Outdoor Recreation (BOR) is the federal agency responsible for assuring coordinated action at all levels of government for coordinating, planning,and financing outdoor recreation. Among other things, the Bureau of Outdoor Recreation cooperates with and provides technical assistance to states, political subdivisions, and private interests. Districts have worked with the agency and state recreation agencies in conducting recreation appraisals for most of the country.

Assistance from the several water resources oriented agencies have benefitted district programs. Close working relationships have been maintained with the Corps of Engineers and the Bureau of Reclamation on their flood control and irrigation projects to assure that on-farm systems are appropriately coordinated with the project developments. The U.S. Geological Survey supplies a great deal of base data on water resources especially useful for planning and layout purposes for dealing with problems involving water supply, flooding, and other water management activities. Data, studies, and reports issued by the Water Resources Council are frequently used for broad planning and analysis purposes. The Corps of Engineers' shore erosion control demonstration site tests and evaluations are also useful.

The Fish and Wildlife Service (FWS) is another source of technical aid providing advice and counsel on a number of fish and wildlife plans and developments.

The primary function of the Economic Development Administration (EDA) is to assist in the long range economic development of areas with severe unemployment and low family income problems. Among other things, EDA programs include technical and planning assistance for areas designated as redevelopment areas. Districts have developed close working relationships with a number of the multi-county economic development districts and have participated with them in various public works undertakings.

An effective working relationship between the Environmental Protection Agency (EPA) and its cooperating agencies and conservation districts is developing. Through field visits, project reviews, and other means, EPA personnel are developing an understanding of conservation district work which is expected to result in mutual benefit.

A variety of state assistance is also used by districts. State forestry, fish and game, water quality, agriculture, recreation, and other agencies frequently provide technical services to district cooperators.

In a number of states and counties, appropriations are made to conservation districts for various operations. Frequently, these funds are used to employ district managers and conservation technicians to provide technical services to land users.

In view of the close relationship between certain of the district technical assistance features and the 208 water quality management task, a separate section is included in this chapter to present in some detail the technical standards and specifications and general methods of operation used by several key technical assistance agencies.

Cost Sharing/Financial Assistance

The economic incentives provided by various cost sharing programs has been of great value in achieving needed land use adjustments and in getting conservation practices applied to the land.

Conservation districts view cost sharing programs along with technical assistance as the two key features of a voluntary approach to conservation accomplishments. District officials have been full participants in cost sharing programs, serving on various committees and program development groups. For several of the programs, long term agreement/contract features are based on a conservation plan developed with the land user and approved by the local conservation district.

The agencies most closely associated with the several U.S. Department of Agriculture-administered cost sharing programs are the Agricultural Stabilization and Conservation Service, the Soil Conservation Service, the Forest Service (through the state forestry agency), and the state Extension Services. In recent years, several states and local jurisdictions have inaugurated cost sharing programs of one sort or another to provide incentives to speed up the application of conservation work on the land. A description of several cost sharing programs may be found in Chapter Eleven.

Another important source of aid is that of financial assistance and/or grants provided by several federal agencies, chiefly on project or public works activities of a group or community nature.

As a part of the Watershed Protection and Flood Prevention Program and the Resource Conservation and Development Program, the Soil Conservation Service provides financial assistance for a variety of project purposes including such features as critical area treatment, flood prevention, agricultural water management, public recreation and fish and wildlife developments, municipal water supply, and other water management measures such as storage for pollution abatement by streamflow regulation or saline water intrusion control. An emergency aid program is also administered by the Soil Conservation Service in cooperation with the Forest Service dealing with such natural disasters as floods and fires.

Similarly, projects installed by the Corps of Engineers (chiefly flood control) and the Bureau of Reclamation (mostly irrigation oriented) have associated financial assistance features.

Under the Land and Water Conservation Act of 1965, the Bureau of Outdoor Recreation administers a program of financial assistance grants to states and their political subdivisions for comprehensive planning, land acquisition, and facility development. Districts have helped sponsor such developments, singly or as part of small watershed and resource conservation and development projects.

Among other features, the Economic Development Administration program includes public works grants. Redevelopment areas in designated economic development districts are eligible for bonus grants for public works projects. Districts have sponsored project activities where these grants have been effectively utilized for multiple-purpose developments such as flood control and municipal water storage. Financial assistance under the Public Works and Economic Development Act provides opportunities for various erosion control and other water quality related projects.

From time to time, state agencies as well as counties, municipalities, special purpose districts, and others have cooperated with districts in various project activities--providing either financial assistance or bearing their share of the costs of the developments.

Credit

Credit is an important component of conservation district programs, enabling land users to finance their share of the cost of applying, operating, and maintaining conservation practices.

The principal credit agency of the U.S. Department of Agriculture is the Farmers Home Administration (FmHA) which administers a variety of resource-related loans. They include: individual soil and water conservation loans, recreation loans, loans to associations, watershed protection and flood prevention loans, small business loans for pollution abatement, resource conservation and development loans, and community facility loans. Conservation districts have maintained close working relationships with FmHA and for many loans, conservation plans and/or soil and site information is a requirement.

Through contractural agreements with project beneficiaries, the Bureau of Reclamation arranges for repayment to the government of reimbursable costs incurred in the construction and operation of water resource projects. The Bureau of Reclamation also administers the Small Projects Act of 1956 and makes loans for construction or rehabilitation of irrigation systems.

The Small Business Administration (SBA) recently modified its regulations to make farmers eligible for loans. A special loan program for water pollution control measures called for under P.L. 92-500 has been established. The Environmental Protection Agency must certify to the Small Business Administration that the measures the farmer is planning to install are needed and will be effective in controlling water pollution. Conservation districts can help make this determination.

TECHNICAL ASSISTANCE

Certain of the technical assistance features encompassed in conservation district programs are particularly relevant to some of the tasks associated with the 208 water quality management program development job. Accordingly, this section has been included to present details concerning technical materials and procedures used by three agencies--Soil Conservation Service, Forest Service/state forestry agencies, and the Bureau of Land Management--as well as several coordinated planning arrangements.

U.S. SOIL CONSERVATION SERVICE

One of the major activities of the Soil Conservation Service (SCS) of the U.S. Department of Agriculture is to provide technical and other assistance to farmers, ranchers, rural and urban communities, and others through conservation districts. SCS personnel assigned to field offices work, through the conservation districts, directly with landowners and operators to assist them in developing conservation plans and applying needed combinations of conservation practices.

Undergirding this effort is a body of scientific knowledge developed from research and experience. This information is maintained in each SCS field office in the form of technical guides. These guides, as well as the way in which conservation districts operate generally, have a direct applicability to many of the required water quality management planning elements. A discussion follows to better acquaint water quality planners and others with the data, procedures, and techniques which are available.

Technical Guides

Purpose

Technical guides are designed to provide basic working tools to help individual land users, groups, and units of government in conservation planning and implementation through conservation districts. They normally contain (either by inclusion or by reference) an array of information pertaining to (a) resource information, (b) soil descriptions and interpretations, (c) alternatives of land and water use, (d) alternative resource management systems, (e) standards and specifications for conservation practices used in resource management systems, and (f) cost-return and other materials on economics.

Resource Information

This section of the technical guide generally contains a reference list to handbooks and manuals as well as various maps, reports, studies, and other resource data.

References

Typically included are such items as:

- National List of Scientific Plant Names
- National Engineering Handbook
- Engineering Field Manual
- Agricultural Waste Management Field Manual
- Technical Releases
- Irrigation Guides
- Drainage Guides
- Key Research Findings
- Other Materials

Maps, Reports, Studies, and Other Resource Data

A variety of resource data is available at conservation district offices--or can be obtained through state and area offices of a cooperating agency. The data considered of the greatest interest to water quality planners includes:

Soils/Soils Interpretations

General Soil Map of State. Data consists of a map and brief description of map units. Units are soil associations composed of soil series or higher categories of the soil taxonomy. Used for state and multi-state planning requiring generalized soil data for decision making.

General Soil Map of County. Data consists of maps and brief descriptions of map units. Units are soil associations composed of soil series.

Published Survey of County or Area. Maps, descriptions, and multiple interpretations show the location, extent, and condition of the soil resources. Detail of mapping reflects the expected use of the data. Used as base data for resource, community, and environmental planning of specific tracts of land.

Major Land Resource Areas (MLRA). Map showing the location and extent of MLRA's in the U.S. and state. Text consists of descriptions of areas with data on major soils, climate, topography, land use, vegetation, and water. Used for broad resoure planning, defining areas of research application, and for coordinating data related to land and water resources.

Soil Limitation and Soil Potential Maps. May show wetness, stoniness, shallowness areas, or other interpretations based on soil surveys. Soil potential maps that show the location, extent, and problems that must be overcome to use a particular tract of land for a planned purpose.

Rates of Erosion Data. Data on rates of erosion experienced under varying conditions of cropland use and cover by kinds of soil. Used for planning land use to reduce soil losses by wind and water to an acceptable level.

Woodland Site Index Data. Shows productivity by Site Index for principal trees on major soils. Used for planning and management of woodland areas and projecting potential productivity.

Pasture Suitability and Rates of Production Data. Identifies pasture species suitable for soil mapping units and experienced rates of production by levels of management input. Used for planning existing and potential pastureland use by tracts of land.

Production Records from Native Grazing Land. Shows total annual production and species composition of plant communities by soil series. Used with soil data to plan potential carrying capacity of native grazing lands.

Range Site Data. Data includes ecological descriptions of potential natural plant communities with condition guides and management interpretations. Used for planning and managing native range sites.

Other. Other soil and site information that is normally available is described later in this section.

Water Resources

River Basin Studies (inventories by watershed, county, or other unit). Data on socio-economic base: land use, soils, erosion and sediment problems, flood water damages, flood plains, water supply, water quality, potential reservoir sites, forestry resources, fish and wildlife resources, status of land treatment, drainage problems, wetlands, etc. The studies include Comprehensive Framework Surveys and Comprehensive Detailed Surveys carried out under the aegis of the Water Resources Council. Comprehensive Surveys with states are also carried out. Some may contain environmental impact analyses. Used for broad resource planning that requires projections of future requirements and needs for land and water resources. Provides alternative measures, plans, and programs to solve problems and meet needs.

Flood Hazard and HUD Insurance Studies. Flood hazard reports and maps delineating flood plain areas subject to flooding. Such technical data is used in local flood plain management programs.

Wetlands Survey. Data on existing and potential areas of wetlands. Used for planning and evaluating significance of wetland areas.

Water Development Sites Survey. Data on existing and potential streambelt areas. Used for general planning of river and stream valleys.

Snow Survey Data. Data for areas in the western states on historic snow accumulations as well as current data during the snow season. Includes snow depths, water content, and related measurements such as precipitation and temperature for the current year and for a historical period. Used for general planning, water supply forecasts, and other interpretations.

Ground Water Maps. Maps and brief descriptions of areas underlain by ground water and commonly show ground water recharge areas, depth to aquifer, and their thickness.

Water Resource Maps. Maps of river basins and aggregate areas with definable hydrologic conditions. Used for broad water resource planning and evaluation.

Water Resource Studies of Watersheds. Preliminary investigations and completed studies of watershed and flood prevention projects. Contain detailed data on soils, geology, climate, land use, flooding, and conservation on the land and needs for a project area. Alternative methods of solving water related problems are included. Most completed project studies include an environmental impact analysis and statement. Used for resource planning in a particular watershed.

Irrigation Studies and Inventories. Map, tabular, and narrative data on existing and potential irrigated areas. Shows location, extent, and condition of land such as areas of salinity and alkalinity. Used for planning and evaluation of land and water problems in a designated irrigated area and potential areas.

Drainage Studies and Inventories. Maps, tabular, and narrative data on existing and potential drainage areas. Used for planning and evaluation of land and water problems in existing and potential areas needing drainage.

Resource Conservation and Development Reports. Contain generalized data on soils, geology, climate, land use, erosion and sediment, conservation treatment and needs, plus some socio-economic data. Used for general planning of project measures, identifying priority needs, and developing action programs.

Potential Impoundment Site Inventory. Map and brief description of site locations where recreation, water supply, and flood control impoundments might be feasible. Used for planning, investigations, and evaluation at a county level to prevent loss of potential sites.

Water Impoundment Survey. Map and size indication of existing water impoundments. Used for planning and evaluation at county and/or state levels.

Non-Point Source Pollution

Roadside, Gully, Streambank, and Other Erosion Surveys. Data on critically eroding areas. Used for general planning related to sediment sources of pollution.

Agricultural Pollution Surveys. Data identifying feedlots that may contribute to water pollution. Used for general planning of point sources of pollution related to agricultural activities.

Surface Mining and Our Environment. A special report to the nation (1967) on surface mining operations and their effects. Used for broad planning and evaluation of mining activities and conditions in the U.S.

Sediment Surveys of Structures. Data on sediment accumulation behind selected reservoirs located in MLRA's of the U.S. Used for planning structure life and relating the impact of land use activities on sediment yield from watershed basin areas.

Agricultural Chemicals Application Data. Data on fertilizer, pesticides, and other agricultural chemicals applied to rural areas. Used for general evaluation of the impact of chemical application to non-point sources of pollution.

Conservation Cropping Systems. Record of known cropping systems needed to produce, protect, and improve the use of land. Used with soil data to plan and manage specific tracts of cropland and future cropland areas.

Conservation Applications. Data on current status of conservation practices. Used for planning conservation programs and needs at field, state, and national levels.

Field Planting Guides. Guides specific to each genus and species for determining the suitability and criteria for planting by soil types.

Conservation Needs Inventory. 1967 data on non-federal lands showing land capability classes and subclasses, land use, non-conservation and conservation needs for each county obtained using a random sampling procedure. Used for county, state, and national program planning and evaluation. Useful in measuring the quality of non-federal land and its use.

General Erosion and Sediment Studies of Selected Areas. Provides gross erosion data on tons/acre of soil moved and may have data on sediment delivery to streams and reservoirs. Some include data on water, wind, roadside, streambank, gully, and urban erosion. Used for general planning and defining critical areas of non-point sources of pollution.

Other. Other sections of this chapter describe resource management systems and conservation practices used in preventing erosion and controlling non-point source pollution.

Land Use

State Land Use Map. Maps that show the location and extent of general land use categories such as cropland, urban and urbanizing, water, etc. Used for state and multi-state planning and evaluation.

County Land Use Map. Maps that show the location and extent of specific land use categories. Used for planning specific tracts of land.

Important Farmland Inventories. Data available at the national level and for the 10 Crop Production Regions of the U.S. on the amount of prime farmland. Inventories are available for some counties showing the location, extent, and amount of prime and unique farmland, farmland of statewide importance, and farmland of local importance. Used for county, state, regional, and national planning. Also used for programs designed to preserve farmlands and for environmental evaluation of federal projects or land resources.

Recreation Inventory. Joint study by National Association of Conservation Districts, Bureau of Outdoor Recreation, and Soil Conservation Service to identify the number, kinds, and scope of recreation enterprises on private lands. Used for planning and evaluating the use and need for recreational areas and facilities.

Appraisal of Recreation Potential. A report that rates the potential of 12 activities for future outdoor recreation development. Used for planning and projecting future needs for recreational areas and facilities.

Other Resource Information

Agricultural Census Data. Data by county and state on land use, crops, livestock, farm tenure, owners and operators, size of farms and ranches, and selected social and economic conditions. Used for broad resource planning.

Demographic Data. Census of population, SMSA's, etc. Shows existing and projected population growth and losses as well as trends in tabular, chart, and map form. Used for determining population density patterns that can be related to other resource data.

Climatic Maps and Weather Data. Rainfall and temperature maps and data records at selected guaging stations in the area. Used for determining rainfall factor and for resource planning including farm and ranch units.

Plant and Animal Guides. Data on life history and habitat requirements of major fish and wildlife species. Used for planning fish and wildlife habitats and determining environmental limitations of specific land areas.

Experienced Yield Data. Record of common crop yields by soil under defined level of management, fertility, plant adaptation, and soil erodibility factor. Used for planning and managing agricultural land by tracts.

State Map of Native Vegetation. Small scale map showing native vegetation such as grass and trees. The amount of detail shown is variable. Used for state and multi-state resource planning and evaluation.

Woodland Cost-Return Data. A program for calculating costs and returns for production of wood crops. Used for planning existing and potential woodland tracts of land.

Windbreak Species Evaluation. Shows the response of windbreak trees and shrub species to soils. Used for planning and managing windbreaks and shelterbelts.

List of Threatened and Endangered Species. Identifies all threatened and endangered species in the U.S. Used for resource planning, watershed planning, and environmental evaluations.

Summary of Status of Fish Farming. Resource data pertaining to many aspects of fish farming on private land. Used for program planning and determining research needs.

Topographic Maps of County. Maps with contour intervals of about 20 feet or more showing landscape features, man-made boundaries, and sea level datum. Also provides base data for developing aspects and views of landscape. Used for engineering and resource planning requiring elevation, slope length, aspect, and other landscape data.

Surficial Geology Maps. Maps and descriptions of surface deposits such as loess, glacial, till, alluvium, outwash, etc. Used for county and state planning, engineering planning, wastes disposal siting, and as an aid in soil survey investigations.

Mineral Deposits Map. Maps with brief descriptions showing location, thickness, and extent of soil, coal, valuable rock, sand, and gravel deposits. Used for county and state resource planning and site investigations for specific tracts of land.

Bedrock Geology Maps. Maps and brief descriptions of bedrock stratigraphy identifying age, thickness, and kind of rock deposits. Used for broad engineering planning.

Areas of Geologic Hazards. On selected geological quads, areas where landslides are active, old landslide areas, fault lines, active volcanoes, as well as potential hazard areas are shown. Used for resource planning, impoundment siting, as well as siting for schools, power plants, hospitals,etc.

Soil and Site Information

In this section of the technical guide, soil surveys are interpreted to facilitate making decisions about land use. Soil characteristics that limit or affect land use decisions are identified. Normally the following information will be included:

Soil survey legends showing all appropriate groupings for various uses and identification legends for all soil maps in use.

Soil descriptions and interpretations suitable for use with individuals, groups, and units of government being assisted.

Capability classifications showing the groupings of all soil mapping units into capability units, including a description of each capability unit.

Other interpretive soil information needed for using the soil loss and wind erosion equations and yield data by kinds of soil under defined treatment and fertility levels and plant adaptations.

Interpretive groupings for native grazing lands (rangeland, native pasture, and grazable woodland) including, where applicable:

> Range site descriptions for rangeland, including descriptions of potential plant community and productivity, range condition guides, and guides to initial stocking rates. (All soils used as rangeland should be part of appropriate range site descriptions.)
>
> Native pasture groupings for native pasture. Reference groupings to individual soils, groups of soils, or woodland suitability groups. In descriptions of native pasture groupings, include kinds, amounts, and forage values of plants within reach of grazing animals; and guides to initial stocking rates adjusted to canopy cover.
>
> Grazing guides for grazable woodlands. Reference guides to appropriate woodland suitability grouping(s). In descriptions include kinds, productivity, and value of understory plants in relation to overstory canopy. Include guides for rating forage value and for initial stocking rates adjusted to overstory canopy.

Soil interpretations for woodland use, by individual soils or by woodland suitability groupings. Include ordination symbol, description, hazards, and limitations for woodland and, either or both, site index and productivity ratings. Interpretations for windbreaks may be by individual soils or by appropriate groups of soils. Include description, adapted species, predicted growth, hazards and limitations, and interpretations about the use of windbreaks in preventing pollution and improving the environment.

Soil interpretations for engineering uses.

Soil interpretations for nonfarm uses such as commercial development, subdivision development, industrial development, and roads and other transportation and transmission systems.

Soil interpretations for outdoor recreation developments.

Soil interpretations for wildlife habitat.

Soil interpretations for pastureland and hayland (by soil groupings such as capability units, by other groupings, or by individual soils).

Soil interpretations for waste disposal systems.

Resource Management Systems

This section of the technical guide deals with the use and conservation treatment of land and water. A resource management system is a combination of conservation practices and management to improve and maintain soil, water, plant, and animal resources (often the same as best management practices).

Subsections for Resource Management Systems

Field offices develop resource management systems necessary to attain an acceptable soil and water program in the working area serving the conservation district for the following land use and management systems:

Land Use and Management Systems

Land use table that summarizes suitable uses of soils consistent with soil interpretations.

Cropland--Resource management systems that provide adequate alternatives needed (1) to protect or improve the soil (in each capability unit or other management grouping); (2) to reduce erosion to safe levels; and (3) to minimize pollution from chemicals, plant nutrients, windblown soil particles, inorganic salts and minerals, and plant residues.

Pastureland and Hayland--Resource management systems that are needed to establish and maintain pasture and hayland in a way that will furnish a satisfactory quality and quantity of forage and provide adequate soil protection and pollution abatement. Such information is to be presented by (1) soil mapping units, (2) land capability units, or (3) pastureland and hayland soil groupings. Use the most practical groupings for the field office.

Native Grazing Land (rangeland, native pasture, and grazable woodlands)--Resource management systems based on proper grazing use to meet livestock forage production, watershed protection, wildlife habitat management, and other compatible objectives.

Woodland-- Resource management systems for each soil or woodland suitability group that (1) provide for maintaining a woodland, (2) achieve wood crop production objectives, and (3) are compatible with primary or secondary uses of wooded lands for forage production, windbreaks and shelterbelts, recreation, wildlife habitat improvement, watershed protection, pollution abatement, or environmental enhancement.

Wildlife Land--Resource management systems needed to attract, support, and produce desired species of fish and wildlife as primary crops or products. Applicable conservation practices are to be included in resource management systems of other land uses in which fish and wildlife are secondary or tertiary crops or products.

Recreation Land--Resource management systems by suitable soil groupings needed for appropriate outdoor recreation use according to development and treatment needs.

Urbanizing Land (land for commerce, industry, community services, residences, transportation services)--Resource management systems required for reducing or overcoming site limitations, for erosion and sediment control, and for enhancing esthetic values.

Surface Mine Areas--Resource management systems required for erosion and sediment control, reclamation, and preservation of esthetic and wildlife value.

Farmstead or Headquarters--Resource management systems needed to control erosion, control pollutants, and preserve or enhance esthetic or wildlife values.

Natural Areas (usually characterized as marsh, forest land, rangeland, or water areas)--Resource management systems needed to preserve the unique character of the natural area.

Other Land Areas.

Wetland Management Systems

Wetlands (see USDI Circular 39)--Resource management systems needed to protect wetlands from siltation, burning, drainage, or pollution and to improve their value for fish and wildlife.

Stream Management Systems

Streams and Rivers--Resource management systems required to use, protect, and stabilize a watercourse.

Water Management System

Ponds, Lakes, and Reservoirs--Suitable alternative uses and the necessary resource management system for each use.

Diffused Surface Water--Resource management systems needed to prevent erosion, control pollutants, and improve soil-moisture relationships.

Ground Water--Resource management systems needed to maintain ground water supplies and to prevent ground water pollution.

Estuaries and Shores--Resource management systems needed to protect and stabilize an estuary or shore area.

Fish Farming--Resource management systems needed to achieve production objectives and control fish wastes.

Waste Management System

Waste Utilization and Disposal--Alternative conservation practices or resource management systems for using and disposing of wastes without adversely affecting soil, water, or related resources.

Resource Management System Development and Use

The development of a resource management system is generally influenced by four main factors:

--The objectives to be achieved
--The kind of soil
--The kind of climate
--The land use or management system in the case of streams, water areas, waste disposal, and the like

Three major objectives are recognized when conservation districts provide aid to cooperators. These objectives are:

Essential treatment to protect the resource base. Included are those conservation practices and management measures considered the minimum treatment necessary to meet this objective. They are accounted for in all conservation plans.

Additional treatment to improve quality of the environment. Included are those conservation practices and measures which may be used to improve the quality of the environment beyond the resource protection objective. Generally, the items provide for a diversity in the landscape, allow secondary uses of land for wildlife, or contribute to health and safety. Land users are encouraged to plan and apply these measures.

Additional treatment to improve the standard of living. Included are those conservation practices and measures contributing to increasing production and economic returns beyond the resource protection objective.

See Appendix 1-2 for examples of resource management systems.

Practice Standards and Specifications

This section of the technical guide describes the conservation practices used in the area for which the guide has been developed. A practice standard identifies a single conservation practice with its conservation purpose and the conditions under which it is applicable.

Practice standards establish the minimum level of acceptable quality for planning, designing, and installing conservation practices.

Specifications describe the minimum requirements necessary to install a conservation practice so that it achieves its intended purpose. Specifications include some or all of the following: major elements of work to be done; kind, quality, and quantity of materials to be used; essential details of installation; appropriate time sequence or season of year; expected quality of completed installation; and other technical instructions necessary for installing or carrying out the practice.

National standards and guides to specifications for conservation practices are contained in the Soil Conservation Service National Handbook of Conservation Practices which recognizes well over 100 practices (see Table 1-12). A majority but not all of these practices provide water quality improvement when properly applied. Several examples of specifications are included as Appendix 1-3.

Cost-Return Information

Usually, the final section of the technical guide deals with cost-return information.

Data is included suitable for estimating the construction, operation, and maintenance costs for conservation practices including the cost of various structures. Experienced yields for alternative land uses and resource management systems are shown as well as costs of establishing the combinations of land uses and treatments and the related returns.

Conservation Planning Assistance

To receive conservation district assistance, a landowner or operator, group, or unit of government makes a request. Usually, anyone requesting assistance is asked by the conservation district to make some commitment toward resource conservation objectives compatible with conservation district programs and long range plans. Application forms for assistance are available at the district office (usually in the county seat), in offices of several agricultural agencies, and from the district officials themselves.

People who apply for help usually have resource problems such as erosion, sediment damage, flooding, irrigation, poor drainage on fields and around buildings, agricultural waste disposal, lack of water supply, or underdeveloped pastures and woodlands.

Table 1-12

CONSERVATION PRACTICES

INDEX

PRACTICE NAME AND UNIT

- Access Road (Ft.)
- Bedding (Ac.)
- Brush Management (Ac.)
- Chiseling and Subsoiling (Ac.)
- Clearing and Snagging (Ft.)
- Commercial Fish Ponds (Ac.)
- Conservation Cropping System (Ac.)
- Contour Farming (Ac.)
- Contouring Orchard and Other Fruit Area (Ac.)
- Cover and Green Manure Crop (Ac.)
- Critical Area Planting (Ac.)
- Crop Residue Use (Ac.)
- Dam, Diversion (No.)
- Dam, Multiple-Purpose (No. & Ac. Ft.)
- Debris Basin (No.)
- Deferred Grazing (Ac.)
- Dike (Ft.)
- Diversion (Ft.)
- Drain System Structure (No.)
- Drainage Land Grading (Ac.)
- Emergency Tillage (Ac.)
- Farmstead and Feedlot Windbreak (Ac.)
- Fencing (Ft.)
- Field Border (Ft.)
- Field Windbreak (Ft.)
- Firebreak (Ft.)
- Fish Raceway (Ft.)
- Fish Stream Improvement (Ft.)
- Fishpond Management (No.)
- Floodwater Diversion (Ft.)
- Floodwater Retarding Structure (No. & Ac. Ft)
- Floodway (Ft.)
- Grade Stabilization Structure (No.)
- Grassed Waterway or Outlet (Ac.)
- Grasses and Legumes in Rotation (Ac.)
- Grazing Land Mechanical Treatment (Ac.)
- Heavy Use Area Protection (Ac.)
- Hedgerow Planting (Ft.)
- Hillside Ditch (Ft.)
- Irrigation Canal or Lateral (Ft.)
- Irrigation Field Ditch (Ft.)
- Irrigation Land Leveling (Ac.)
- Irrigation Pit or Regulating Reservoir (No.)
  - Irrigation Pit
  - Regulating Reservoir
- Irrigation Storage Reservoir (No. & Ac.Ft.)
- Irrigation System (No & Ac.)
  - Drip (No. & Ac.)
  - Sprinkler (No. & Ac.)
  - Surface & Subsurface (No.& Ac.)
- Irrigation System, Tailwater Recovery (No.)
- Irrigation Water Management (Ac.)
- Irrigation Water Conveyance (Ft.)
  - Ditch and Canal Lining (Ft.)
  - (Nonreinforced Concrete)
  - Flexible Membrane
  - Galvanized Steel
- Pipeline (Ft.)
  - (Aluminum Tubing, Plastic Tape Coated)
  - (Asbestos-Cement)
  - (Nonreinforced Concrete)
  - (High Pressure Underground Plastic)
  - (Low Head Underground Plastic)
  - (Steel)
  - (Reinforced Plastic Mortar)
- Land Clearing (Ac.)
- Land Smoothing (Ac.)
- Lined Waterway or Outlet (Ft.)
- Livestock Exclusion (Ac.)
- Minimum Tillage (Ac.)
- Mole Drain (Ft.)
- Mulching (Ac.)
- Obstruction Removal (Ac.)
- Open Channel (Ft.)
- Pasture and Hayland Management (Ac.)
- Pasture and Hayland Planting (Ac.)
- Pipeline (Ft.)
- Planned Grazing Systems (Ac.)
- Pond (No.)
- Pond Sealing or Lining (No.)
  - Flexible Membrane (No.)
  - Soil Dispersant (No.)
  - Bentonite (No.)
  - Cationic Emulsion - Water-Borne Sealant (No.)
  - Asphalt Sealed Fabric Liner (No.)
- Prescribed Burning (Ac.)
- Proper Grazing Use (Ac.)
- Proper Woodland Grazing (Ac.)
- Pumped Well Drain (No.)
- Pumping Plant for Water Control (No.)
- Range Seeding (Ac.)
- Reclamation of Surface Mined Land
- Recreation Area Improvement (Ac.)

PRACTICE NAME AND UNIT con'd

Recreation Land Grading and Shaping (Ac.)
Recreation Trail and Walkway (Ft.)
Regulating Water in Drainage Systems (Ac.)
Rock Barrier (Ft.)
Row Arrangement (Ac.)
Spoilbank Spreading (Ft.)
Spring Development (No.)
Stock Trails and Walkways (Ft.)
Stream Channel Stabilization (Ft.)
Streambank Protection (Ft.)
Stripcropping, (Ac.)
    Contour (Ac.)
    Field (Ac.)
    Wind (Ac.)
Structure for Water Control (No.)
Stubble Mulching (Ac.)
Subsurface Drain (Ft.)
Surface Drainage (Ft.)
    Field Ditch (Ft.)
    Main or Lateral (Ft.)
Terrace (Ft.)
Toxic Salt Reduction (Ac.)
Tree Planting (Ac.)
Trough or Tank (No.)
Vertical Drain (No.)
Waste Management System (No.)
Waste Storage Pond (No.)
Waste Storage Structure (No.)
Waste Treatment Lagoon (No.)
Waste Utilization (No. & Ac.)
Waterspreading (Ac.)
Well (No.)
Wildlife Upland Habitat Management (Ac.)
Wildlife Watering Facility (No.)
Wildlife Wetland Habitat Management (Ac.)
Windbreak Renovation
Woodland Direct Seeding (Ac.)
Woodland Improved Harvesting (Ac.)
Woodland Improvement (Ac.)
Woodland Pruning (Ac.)
Woodland Site Preparation (Ac.)

Individuals and organizations in towns, or the city or county government itself, may be concerned with problems such as erosion and sediment pollution from highways, shopping centers, airports, subdivisions, or other new construction. They may also want information on soils to determine their suitability for various urban purposes such as housing, recreation, waste disposal, road construction, and the like.

When the district officials approve an application for services, they assign a professional conservationist to assist the cooperator.

Ordinarily, the assistance rendered results in the development of a resource conservation plan. The planning process is a joint effort in which the conservationists' technical knowledge is pooled with the knowledge and experience of the land users with a view toward planning and applying needed conservation measures and treatments.

Planning Sequence

Briefly, the general sequence of planning may be described as follows:

Providing Information--making the public aware of conservation district assistance

Requesting Assistance--land user(s) apply to district for help

Determining Objectives--applicant's needs and goals

Providing Soil and Water Inventory Data--getting the facts

Interpreting Inventory Data--for specific application to land users

Developing Conservation Alternatives--alternative land use and treatment possibilities

Making Decisions--land users select from alternatives and decide on specific uses and treatments

Recording Decisions--decision recorded in conservation plan

Implementing Decisions--land user(s)

Reevaluating and Updating--periodic follow-up with land user(s) resulting from changes in use or technical advances

The professional conservationist in his planning assistance draws heavily on the technical guide materials. He is also assisted by specialists who are available to provide information on soils, agronomy, engineering, biology, range, forestry, recreation, and other elements that may be involved in resource management.

Conservation Plan

The conservation plan, a copy of which is furnished to the land user(s) and a copy retained by the district, includes:

Conservation plan map(s)
Soil survey (soil map, soil descriptions and interpretations)
Water, plant, animal, and other inventory and management information with needed interpretations and evaluations
Record of decisions contributing to the land use(s) and conservation treatment(s)
Alternatives for land use(s) and conservation treatment(s) for which decisions have not yet been made
Record of understanding as to cooperation between cooperator and the district
Other information useful to the land user(s)

Examples of several key elements of the conservation plans are shown in Appendix 1-4.

Conservation Application Assistance

During or following development of the conservation plan, the district makes available the services of conservation personnel to give on-site assistance in the application of the conservation practices and treatments. Such assistance is subject to the priorities of the district and the total manpower available.

For the simpler types of practices, "job sheets," "how to do it" pamphlets, planting guides, and the like are frequently provided to the cooperator. For the more complex practices such as terraces, dams, lagoons, debris basins, irrigation and drainage systems, etc., assistance may include soil and site investigations, engineering surveys, designs and specifications, construction plans, and the layout of practices on the cooperator's land.

The practice standards and specifications portions of the technical guides are particularly applicable in these undertakings.

U.S. FOREST SERVICE/STATE FORESTRY AGENCIES

The Forest Service (FS) of the U.S. Department of Agriculture has responsibilities for certain federal activities, including the management of National Forests and Grasslands. Through its state and private forestry activities, it provides national leadership for the protection, development, management, and use of private and other non-federal forest lands.

The Forest Service cooperates with and shares responsibilities with other agencies and organizations. The principal "partner" in carrying out these cooperative forestry programs is the forestry agency in each state which works directly with landowners and local units of government, including conservation districts.

An important function of the conservation district in this cooperative program is to serve as the contact between woodland owners and various sources of assistance such as the state forester and agencies such as the Agricultural Stabilization and Conservation Service, the Cooperative Extension Service, and the Soil Conservation Service.

Technical Standards

Through its research efforts, administration of the National Forests and Grasslands, and state and private forestry activities, the Forest Service has developed technical standards and materials dealing with such areas as timber management, multiple use management, watershed management, transportation systems management, and others.

While some of this information may be available at conservation district or state forestry agency offices, most is only obtainable from Forest Service sources such as its national, regional, or National Forest offices.

An example of Forest Service erosion control guidelines (roughly analogous to the Soil Conservation Service resource management system concept) is shown in Appendix 1-5.

Forest Management Plans

The conservation plan typically developed with conservation districts is described earlier in this chapter. The plan, developed for the land user's entire property and which may include a segment on forestry, is prepared on the basis of the land user's desires for the use of his land, modified by the potentials and limitations of his soil and water resources.

The land user is encouraged by the conservation district to secure more detailed forestry assistance from the local state forestry representatives and consulting or industrial foresters who can assist him develop and carry out a forest management plan. A publication jointly developed by the National Association of Conservation Districts, the U.S. Forest Service, and the National Association of State Foresters discusses the desirability of foresters working with the Soil Conservation Service and other agencies and organizations assisting the land user. When this is done, the forest management plan fits into and becomes part of the total conservation plan for the same property. Through such working arrangements, the state forestry representative is able to utilize soil survey and other pertinent information in developing the forest management plan.

Forestry Application Assistance

Many landowners lack the necessary equipment, time, training, or labor to carry out some forestry practices. Consequently, the availability of well trained, supervised work crews with tools, equipment, and expertise often determines whether or not the job will be accomplished. Many conservation districts organize or contract for work crews with trained leaders for their cooperators. Most state forestry agencies provide trees, and some make tools and/or equipment available. Consulting foresters and forest industries also may provide supervised labor crews, trees, tools, and equipment to accomplish forestry work on private lands. Through the conservation district and with the help of cooperating agencies and individuals, the landowner can be referred to the most appropriate source of assistance for his particular job.

BUREAU OF LAND MANAGEMENT

Resources managed and leased by the Bureau of Land Management (BLM) of the U.S. Department ofthe Interior include timber, minerals, geothermal energy, wildlife habitat, livestock forage, recreation and cultural areas, and open space. While many of these resource areas are encompassed in conservation district programs, those associated with range and grazing management are particularly relevant. District interest centers not only on the use and care of the public lands, but on the intermingled and associated private lands as well. Close working relationships are needed to achieve effective coordination of efforts and wise use of the resources.

Technical Standards

The Bureau of Land Management has developed a considerable variety of technically-oriented surveys, procedures, standards, and evaluation techniques to aid in its range and grazing management programs.

Physical Resource Studies

Among the more important resource inventories are those associated with forage surveys, soil investigations, and range suitability classifications.

Range studies are conducted as needed to provide vegetative and soils data, utilizing a stratification/key area/key species concept. Crucial areas for wildlife, watershed, and other values are also identified. Study methods employed include actual use determinations, utilization studies and trend information, and certain supplementary study techniques and procedures.

Grazing Management Systems

A grazing management system is defined as a method of manipulating livestock grazing to sustain desired levels of both vegetative and livestock production, consistent with multiple use. Physical resource study data and other information are interpreted to establish the systems and to achieve coordination with other resource uses. The systems are a basic component of the Bureau's allotment management planning.

Grazing management system design may be influenced by multiple use management goals which act as constraints upon the grazing system. Examples of such goals include soil stabilization, watershed protection, increasing grazing capacity, improving wildlife habitat, permitting vegetative reproduction, etc.

Management Practices

The Bureau of Land Management has developed a number of management practices and standards for construction of all range improvements on public lands administered by the agency. Range improvements are an integral part of the planning for improvement and management of the resource and are installed to facilitate multiple use.

Generally, the Bureau of Land Management's management practices include the following categories:

Water Developments--designed chiefly to improve distribution of animals on the range, both livestock and wildlife populations.

Fencing--designed to gain proper distribution and utilization of the range and to carry out a plan of grazing.

Stock Trails--designed to obtain more uniform utilization.

Land Treatment--designed chiefly to provide an improved vegetative cover, prevent surface runoff, allow precipitation to be absorbed into the soil, increase forage yield, and hold soil in place.

Several examples of Bureau of Land Management standards and specifications are included as Appendix 1-6.

Allotment Management Plans

A basic procedure used by the Bureau of Land Management is that of allotment management planning. It has as its objective the establishment of a grazing management program which obtains and sustains stable soil and watershed conditions and a dependable supply of forage in balance with other multiple uses. It also serves to provide continuity to the range management program.

An "allotment" is defined as an area designed for grazing use under one plan of grazing management. The allotment may contain several use areas or pastures and may be used by one or more livestock operators.

An allotment management plan (AMP) is defined as a concisely written program of action designed to reach specific management goals. It serves as a pattern for implementing the necessary improvement and management practices to achieve the goals set out in the plan.

Coordination is emphasized in the planning process--coordination of grazing use with other resources and with the use of associated lands, both federal and non-federal.

The major components of an allotment management plan include:

General Information. A concise statement of the condition of the range resources (forage, soil, watershed, etc.) and a description of the resource use problems and conflicts. Ordinarily it contains a map, description of the area, applicable resource data, and existing land treatment and range improvement works.

Objectives. The detailed objectives for a specific allotment are set forth indicating specific items to be accomplished such as quantity and quality of forage, protecting crucial wildlife habitat, erosion control measures, etc.

Grazing Management System. A description of the grazing system to be used in achieving the objectives of the allotment management plan.

Range Studies. A brief discussion of all range studies, including actual use information, needed to evaluate the effectiveness of the grazing system in meeting the objectives of the plan.

Needed Improvement Practices. A detailed description of the proposed range improvement and treatment projects needed to facilitate the management of the allotment.

Agreement. Signature by the permittee(s) and the Bureau of Land Management district manager.

Grazing Administration

The Bureau of Land Management organization at the field level consists of land management districts or areas of responsibility which encompass public lands. These lands may be within organized grazing districts, public lands outside grazing districts, other reserved federal lands, or non-federal lands leased under the Pierce Act. They may also be privately owned or controlled lands administered under exchange-of-use agreement. Each district is under the direction of a district manager.

In general, the objective of grazing district administration is to obtain the optimum sustained yield of forage for use by livestock and wildlife in balance with a multiple use program. The program should be designed to enhance and perpetuate range resources and facilitate maximum economic use consistent with long term objectives. Range resources include forage, soil, watershed, recreation and esthetic values, and wildlife habitat.

Awards of grazing privileges on those public lands administered by the Bureau are achieved through various license, permit, and lease procedures. Allotment management plans are emphasized for the management of livestock grazing to attain resource management objectives. While the plans are voluntary, the key features are nevertheless reflected in specific license and permit stipulations.

Allotment management plans are developed in cooperation with the user to provide for the proper use and conservation of the public lands, to coordinate with the use of private lands, and to provide flexibility of operation consistent with the objectives of the plan. Where the operator is in agreement, the plan may include those private lands normally used in conjunction with public lands.

Through cooperative agreements and other arrangements, lessees are authorized to construct and maintain improvements such as seeding, brush removal, fencing, and other facilities.

COORDINATED PLANNING

From time to time needs surface which are best handled through the development of coordinated planning agreements and procedures. Generally, these needs relate to situations involving public lands which are intermingled with or adjacent to private lands or where agency missions and services are potentially duplicative.

In such instances, conservation districts, working through the National Association of Conservation Districts, have sought various forms of coordination designed to expand assistance to cooperators and to assure an orderly development of sound resource planning efforts.

Coordination of Conservation Planning/Resource Planning

(Bureau of Land Management, Forest Service, Soil Conservation Service)

In January, 1975, a memorandum of understanding was developed,in consultation with the National Association of Conservation Districts, between the Bureau of Land Management, the Forest Service, and the Soil Conservation Service. Its purpose was to establish policy and general guidelines for use by the three agencies for coordinating certain activities in resource planning and in working with conservation districts, state and local agencies, private landowners who are conservation district cooperators, and others in developing and implementing sound resource management and conservation programs. The agreement is included as Exhibit 1-1.

Coordination of Range Programs on Non-Federal Forest Lands and Inventory of Forests and Rangelands

(Forest Service and Soil Conservation Service)

A recent agreement developed between the Forest Service and the Soil Conservation Service, and concurred in by the National Association of Conservation Districts and the National Association of State Foresters, had as its purpose the clarification of range technical assistance responsibilities for non-federal forested range and inventory responsibilities on non-federal forests and rangelands. The agreement seeks to promote harmonious working relationships between the two agencies and to prevent duplication of effort. The agreement is included as Exhibit 1-2.

Exhibit 1-1

UNITED STATES
DEPARTMENT OF AGRICULTURE
Soil Conservation Service
Washington, D.C. 20250

UNITED STATES
DEPARTMENT OF AGRICULTURE
Forest Service
Washington, D.C.20250

UNITED STATES
DEPARTMENT OF INTERIOR
Bureau of Land Management
Washington, D.C. 20240

I. PURPOSE

This memorandum of Understanding, developed in consultation with the National Association of Conservation Districts, establishes the policy and general guidelines for use by the Bureau of Land Management (BLM), Forest Service (FS), and Soil Conservation Service (SCS) for coordinating certain of their activities in resource planning and for working with Conservation Districts, State and Local agencies, private landowners who are conservation district cooperators, and others in developing and implementing sound resource management and conservation programs.

The May 19, 1971, agreement between BLM and SCS is hereby superseded.

II. POLICY

The Bureau of Land Management, Forest Service, and Soil Conservation Service will cooperate to the fullest degree possible in preparing an implementing resource management plans on operating units, allotments and other resource areas made up of intermingled or adjacent BLM and FS administered lands (hereinafter called public lands) and lands controlled by Conservation District (CD) cooperators (hereinafter called private lands).

The agencies cooperating on particular operating units or allotments will vary depending upon the landownership pattern within the planning area. The signatory agencies will seek to cooperate with all owners or manager of land and resources within each specific area--including states, counties, or private owners. Other agencies and organizations will be involved as needed and appropriate.

III. AUTHORITY

BLM, FS, and SCS operate under separate legislative authorities and departmental policies including the following:

A. Soil Conservation Act, Public Law 46, 74th Congress, 1935, as amended, and Reorganization Plan No. IV, 1940, (16 U.S.C. 540a-f) and Comptroller General's Decision B-115665 (33C.G. 133), October 1, 1953.

B. The Taylor Grazing Act of June 28, 1934 (48 stat. 1269; 43 US Code 315 as amended).

C. National Environmental Policy Act of 1969, Public Law 91-190, 91st Congress, January 1, 1970.

D. Memorandum of Understanding between USDA and USDI dated April 20, 1942.

E. Joint BLM-SCS Memorandum of April 10, 1964.

F. The Organic Act of June 4, 1897 (30 Stat. 35, as amended; 76 Stat. 1157; 16 U.S.C. 551).

G. The Multiple Use-Sustained Yield Act of June 12, 1960, (74 Stat. 215, 16 U.S.C. 528-531).

H. Title III, Bankhead-Jones Farm Tenant Act of July 22, 1937 (50 Stat. 525) as amended 76 Stat. 745), 7 U.S.C. 1010-1012.

I. Memorandum of Understanding between the Forest Service and Bureau of Land Management dated October 26, 1966.

J. Wild Free-Roaming Horses and Burros Act--P.L. 92-195 (85 Stat. 649, 16 U.S.C. 1331-1340).

K. All other applicable statutes and regulations not specifically referred to above relating to BLM, FS, and SCS programs.

IV. RESPONSIBILITY

A. The BLM and FS plan and conduct multiple-use resource management and conservation programs on lands under their jurisdiction. FS also has responsibilities to demonstrate and promote sound grasslands agriculture and conservation practices on the National Grasslands and areas of which they are a part.

B. The SCS provides technical and financial assistance to conservation district cooperators and participants in USDA cost-share programs for planning and applying authorized conservation programs on privately controlled lands.

C. The Conservation Districts, which are legal subdivisions of state government, develop annual and long-range programs, secure and coordinate assistance from appropriate agencies and organizations, encourage and enter into cooperative agreements to assist individuals, groups, and units of government in conservation planning and application, provide means for determining local attitudes and objectives, and serve as catalysts to develop and maintain local interests in and support for conservation and development of resources.

V. OBJECTIVES

The objectives of coordinated resource planning are:

A. To promote cooperation between agencies and individuals to improve management and compatible use of the resources for which each is responsible.

B. To implement resource management plans to achieve compatible resource uses based on sound ecological relationships for logical management areas such as operating units, grazing allotments, and subwatersheds.

C. To optimize a sustained flow of food, fiber, and other goods, services and benefits from such lands while at the same time protecting and enhancing environmental qualities.

VI. GENERAL CONSIDERATIONS

A. Interagency reimbursement will not be made for planning and application assistance done under this memorandum.

B. BLM and FS will contact users of the public lands that are included in planning areas under their jurisdictions, and will retain responsibility for meeting all requirements of the laws and regulations pertaining to the use and management of these lands.

C. Cooperator contacts and followup assistance will normally be made by the agency having primary planning responsibility or will be mutually agreed upon before the onset of planning.

D. When any practices, structures, or projects are to be applied to or installed upon public lands under the jurisdiction of the BLM or FS, authorization must be obtained from the appropriate agency prior to initiation of the action.

E. The priorities and management objectives for BLM and FS administered lands will be determined through the responsible agency's planning system. However, special consideration normally will be given to resource areas presenting opportunities for coordinated resource planning.

F. Conservation districts will be encouraged to have memoranda of understanding with BLM, FS, and/or other appropriate public land agencies at the local level.

G. When requested by the administering agency, SCS may provide technical assistance on public land intermingled or adjacent to private lands covered by a resource management pln when results benefit the private land.

H. Where State and private forests and related lands are involved the Forest Service will discharge its responsibilities through the appropriate State organization.

VII. STATE COORDINATION

A. STATE EXECUTIVE GROUP--The State Director (BLM), State Conservationist (SCS), and Regional Forester and/or Area Director (FS) will comprise this group. The chairman, State Conservation Commission, Committee, or Board, as appropriate, will be invited and encouraged to become a member. This group will develop and put into effect supplemental agreements, as needed, to meet the objectives of this memorandum, including procedure for specific programs to achieve agency coordination and cooperation throughout the State. They will meet annually to review progress, outline a course of action with appropriate followup, and otherwise facilitate coordination of agency procedures and programs. Representatives of the State Association of CD's and other appropriate State and Federal agencies such as State land, forestry, and wildlife agencies will be invited to participate in this meeting.

B. STATE TASK GROUP--This group will follow through with implementation of coordinated planning in the state. It shall be small in number but include representatives of major land and resource agencies including BLM, SCS, FS, and appropriate state agencies.

C. Conservation District Meetings--When invited by the CD, the BLM, SCS, and FS, as appropriate, will present reviews of proposed resource activities of concern to the District. Other agencies involved in the coordinated approach will be encouraged to do the same. The CD's will be encouraged to give due consideration to such activities when developing long-range programs and assigning priorities and work schedules for inclusion in their annual work plan.

VIII. INITIATING, PLANNING AND SCHEDULING

A. Initiation-- The State Executive Group will arrange to acquaint field personnel with this memorandum to assure mutual understanding and interpretation.

B. Planning-- Active participation by all key participants, from inception to completion of the planning process, is essential. The planning team should include representatives from all landowners and resource administering agencies within the oprating unit, allotment, or resource area. A team leader should be designated for each planning unit considering such items as landownership pattern, location of the area, time and manpower needs and resources involved. Where full-time agency participation is not warranted, suitable review of the arrangements should be made at the local level so interagency coordinated planning can proceed with reasonable assurance that the final plan will be acceptable to all.

C. Scheduling-- Each agency and group has its own program of activities for which priorities are established. Coordinated resource planning should be made to dovetail with each agency's activity schedule. This requires a reasonable amount of give-and-take between agencies and with conservation districts in the selection and assignment of priority to requests for coordinated plans. The State Executive Group will jointly prepare guidelines useful at the county and local levels in determining priorities, assigning responsibilities, and scheduling needed assistance.

IX. MODIFICATION

This agreement shall remain in effect until modified by the parties in writing: and is renegotiable at the option of any one of the parties.

ENDORSEMENT

George R Bagley 1/21/75
President, National Association of
Conservation Districts

APPROVAL

Kenneth E Grant
Administrator, Soil Conservation Service
JAN 10 1975

Curt Berklund JAN 15 1975
Director, Bureau of Land Management

R A Kesler JAN 14 1975
for Chief, Forest Service

Exhibit 1-2

Agreement for Coordination of Range Programs on Nonfederal Forest Lands and Inventory of Forests and Rangelands

United States Department of Agriculture
Forest Service--Soil Conservation Service

I. INTRODUCTION

The Forest Service (FS) and Soil Conservation Service (SCS) each have long-standing statutory and delegated authorities relative to range programs for nonfederal forest lands and for inventory activities on forests and rangelands. It is essential that each agency's role and responsibilities in these activities be defined and understood to avoid duplication of effort and make maximum effective use of manpower and monetary resources.

II. PURPOSE

This agreement is intended to promote harmonious working relations between the two agencies at all levels and to clarify (1) range technical assistance responsibilities for nonfederal forested range (grazable woodland),1/ and (2) inventory responsibilities on nonfederal forests and rangelands.

III. POLICY

Inventory responsibilities of each agency are separate from responsibilities for technical assistance to landowners and users.

SCS and FS will cooperate fully within the scope of each agency's authorities in carrying out programs of technical assistance to owners and users of nonfederal forested range.

FS and SCS will coordinate resource inventories to avoid overlap or duplication of data collection activities. They will cooperate in identification of data needs and will use data developed by each other and by other agencies or groups as may be applicable to the programs they administer.

IV. RESPONSIBILITIES

A. Technical Assistance

1. SCS will provide range technical assistance on request to landowners and users of nonfederal forested range. Such assistance will normally be provided through conservation districts as a part of SCS responsibility for conservation planning including assisting landowners and users with land use decisions.

2. FS will work indirectly with landowners and users of nonfederal forested range through appropriate State and Federal agencies, consultants, and others in its cooperative forestry programs.

1/ For purposes of this agreement, the terms "forested range" and "grazable woodland" are deemed to be synonomous and are defined as, "forest land with a plant understory usable by grazing and browsing animals in harmony with wood production and other forest values."

3. SCS will cooperate with State forestry organizations to assure that all land use alternatives are presented and that forest management is fully integrated into conservation plans developed with landowners and users.

4. FS will work with State forestry organizations to enhance their knowledge of forested range, forage potential, and grazing opportunities so that they can reflect these values in advising forest landowners with regard to multipurpose resource management.

5. FS will encourage appropriate State agencies to work closely with SCS and conservation districts to help landowners make full use of existing SCS technical assistance on forested range.

6. FS and SCS will work together and with other agencies and organizations to identify research needs for forested range and to interpret and disseminate research information to appropriate users.

B. Inventories

1. FS and SCS will work together on inventory programs for nonfederal forests and rangelands to identify data needs, avoid duplication of effort, and assure that data collected by each agency are mutually usable.

2. SCS will be responsibile for forage resources inventory on nonfederal lands.

3. FS will be responsible for timber resource inventory on all lands.

4. Land Inventory and Monitoring (SCS) and Resources Evaluation (FS) personnel will meet regularly to assure coverage, avoid duplication, develop common methodology and standards, and broaden opportunities for sharing of information.

V. OTHER CONSIDERATIONS

A. Both savannas and natural grasslands invaded by mesquite or other low value trees will be considered rangelands unless the landowner or user chooses to manage the land primarily for wood products. Landowner's land use intentions will determine the kind of technical assistance and the agency or agencies responsible for delivery.

B. This agreement recognizes the policies set forth in the following:

1. Memorandum of understanding of SCS, FS, and ERS pertaining to comprehensive river basin planning, April 15, 1968.

2. Tripartite memorandum of ES, SCS, and FS pertaining to forestry, February 11, 1974.

3. Joint memorandum of understanding of BLM, FS, and SCS pertaining to coordinated resource planning, January 1975.

C. Cooperation with other agencies and organizations having responsibilities or interests in activities covered by this agreement is important.

D. Existing memoranda of understanding between conservation districts and State forestry agencies are recognized and will be used to further the purposes of this agreement.

E. Procedures for implementing this agreement may be developed locally in consultation with officials of conservation districts and State organizations.

F. Interagency reimbursement will not be required but may be made under separate agreement as appropriate.

VI. MODIFICATION

This agreement shall remain in effect until cancelled or modified by the parties in writing. It may be amended or supplemented to include agreement by other agencies or groups, as appropriate.

APPROVED:

R M Davis 6/22/76 John R. McGuire 6-23-76
Administrator Date Chief Date
Soil Conservation Service Forest Service

CONCURRED:

George R. Bagley 7/1/76 O W Moody June 29, 197
President Date President Date
National Association of National Association
Conservation Districts of State Foresters

CHAPTER TWO

PLANNING BOUNDARIES

40 CFR Part 131.11

(a) *Planning boundaries.* A delineation, on a map of appropriate scale, of the following: (1) The approved State planning areas included in the State planning process submitted and approved pursuant to § 130.41 of this Chapter and areawide planning areas designated pursuant to § 130.13 of this Chapter.

(2) Those areas in which facilities planning has been deemed necessary by the State pursuant to § 35.917-2 of this Chapter.

(3) The location of each water quality and effluent limitation segment identified in § 131.11(b) (2).

(4) The location of each significant discharger identified in § 131.11(c).

(5) The location of fixed monitoring stations.

(NOTE: Such monitoring station locations may be omitted if such locations are available in the EPA water quality information system).

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INTRODUCTION

The governor of each state is required to designate a state agency to be responsible for the overall conduct, coordination, and development of the state water quality management plan. The governor may also designate areawide planning areas within the state to develop areawide water quality management plans through a single representative organization. In non-designated areas, the state assumes responsibility for plan development.

DISTRICT INVOLVEMENT

Conservation districts can provide advice and counsel on boundaries (if not already established) or on boundary modifications based on various district activities: their experiences in working with such multi-county groups as economic development districts, councils of government, and regional planning commissions; and their involvement in resource conservation and development projects and the several types of river basin surveys and investigations.

Representatives of districts could serve as members of the planning agencies or on advisory boards. As a means of fostering better communications and working relationships, districts could form area associations coterminous with the area and state planning areas.

In the event interstate agreements are needed for coordination purposes, districts could provide advice and counsel on the needs, format, and appropriate agencies and entities to be included.

Resource information is available in conservation districts to help locate the water quality and effluent limited segments. Details concerning possible district aid and involvement are covered in the discussions on the Element (b), (d), and (j) tasks in Chapters Three, Five, and Eleven.

Local knowledge and judgments, together with district resource materials, could be an aid in determining the location of fixed monitoring stations. With funding, districts could operate and maintain the stations.

CHAPTER THREE

WATER QUALITY ASSESSMENT AND SEGMENT CLASSIFICATIONS

40 CFR Part 131.11

(b) *Water quality assessment and segment classifications.* (1) An assessment of existing and protential water quality problems within the approved planning area or designated areawide planning area, including an indentification of the types and degree of problems and the sources of pollutants (both point and nonpoint sources) contributing to the problems. The results of this assessment should be reflected in the State's report required under Section 305(b) of the Act.

(2) The classification of each segment as either water quality or effluent limitation as defined in § 130.2(o) of this Chapter.

(i) Segments shall include the surrounding land areas that contribute or may contribute to alterations in the physical, chemical, or biological characteristics of the surface waters.

(ii) Water quality problems generally shall be described in terms of existing or potential violations of water quality standards.

(iii) Each water quality segment classification shall include the specific water quality parameters requiring consideration in the total maximum daily load allocation process.

(iv) In the segment classification process, upstream sources that contribute or may contribute to such alterations should be considered when identifying boundaries of each segment.

(v) The classification of segments shall be based on measurements of instream water quality, where available.

- -

INTRODUCTION

The main purpose of the water quality assessment and segment classification process is to act as a preliminary indication of the type and extent of planning required. In addition to describing water quality, the assessment is designed to identify point and non-point source problem areas which need to receive detailed analyses and waste load allocations.

Streams and other water bodies are classified into two types of segments: (a) "effluent limited segments" for those that now meet state water quality standards or will meet them after limiting the amount of pollutants discharged; and (b) "water quality limited" for those that will not meet state water quality standards even with discharge limitations. In the case of the latter, additional treatment measures would be required to reduce waste loads to the level required to meet the standards.

Element (b) and Element (d) (discussed in Chapter Five) are closely related and much of the work would probably be done concurrently.

DISTRICT INVOLVEMENT

Conservation districts can contribute substantially to the assessment process, particularly with respect to non-point source pollution.

Districts have a great deal of resource information useful in identifying the types and degrees of problems and sources of pollutants. Resource data includes such items as soil surveys, conservation and group plans, district annual and long range programs, special studies on erosion and sedimentation (critical areas, roadsides, streambanks, surface mines, etc.), watershed project undertakings and river basin investigations, conservation needs inventories, and other reports and studies. Chapter One contains a detailed listing of typically available materials.

In addition to data, districts represent a source of local knowledge and informed judgments, both of which could play an important part in view of the probable scarcity of monitoring information and cause and effect relationship studies.

The segment classifications represent a key step in water quality management planning and should be of considerable interest to conservation districts, for it surfaces those areas and aspects in which district programs would be chiefly applicable. Since planning for non-point sources under Section 208 is only required in relation to water quality needs, non-point source planning needs to be undertaken only in water quality limited segments.

While the segment classification process is technically oriented, districts would be well advised to be aware of both the process and the resultant classifications. Districts have resource data useful in the determinations and should seek to contribute their knowledge early in the process. They should also participate in public hearings or request them if they have not been held.

Segments will include the surrounding land areas that contribute to the pollution problems as well as upstream sources that may be involved. Districts have some excellent source materials for delineating watersheds and basins. Among other materials, the watershed portion of the conservation needs inventory, various watershed and flood prevention project undertakings, and river basin surveys and investigations would be applicable.

CHAPTER FOUR

INVENTORIES AND PROJECTIONS

40 CFR Part 131.11

(c) *Inventories and projections.* (1) An inventory of municipal and industrial sources of pollutants and a ranking of municipal sources which shall be used by the State in the development of the annual State strategy described in § 130.20 of this Chapter and the "project priority list" described in § 35.915(c) of this Chapter. The inventory shall include a description, by parameter, of the major waste discharge characteristics of each significant discharger of pollutants based on data from the National Pollutant Discharge Elimination System and the associated compliance monitoring systems, whenever available.

(2) A summary of existing land use patterns.

(3) Demographic and economic growth projections for at least a 20-year planning period disaggregated to the level of detail necessary to indentify potential water quality problems.

(4) Projected municipal and industrial wasteloads based on § 131.11(c) (1) and (3).

(5) Projected land use patterns based on § 131.11(c) (2) and (3).

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INTRODUCTION

The chief aim of Element (c) is the estimation of existing and projected wasteloads. Point source estimates are required and states have an option to include non-point estimates as well.

Existing land use patterns are expected to be categorized so that pollutant loadings can be assigned to each category. The demographic and economic growth projections together with existing land use data are expected to serve as a basis for projecting future land uses and the amount and distribution of future wasteloads.

DISTRICT INVOLVEMENT

Districts can make significant contributions to the land use summaries and demographic and economic projections required by this element.

Existing land use information reflected in maps and/or reports may already be available in many conservation districts, along with other resource data helpful to the task. With funding, districts could undertake the job of determining land use, building on a variety of existing data and information.

Similarly, districts could help in projecting land use patterns. Some information would be available through district work in resource conservation and development projects, watershed and flood prevention projects, river basin surveys and investigations, and other multi-county endeavors. Important, too, would be local knowledge and judgments based on trend observations of land uses, ownerships, sales, and the like.

Land use, demographic, and economic growth projections have long been an integral part of the various types of river basin surveys and investigations. National Economic Projections of the Water Resources Council have been used as well as other techniques. The Economic Research Service could provide valuable help here as well as the land grant universities and the several state, area, and county planning and development agencies.

CHAPTER FIVE

NON-POINT SOURCE ASSESSMENT

40 CFR Part 131.11

(d) *Nonpoint source assessment*. An assessment of water quality problems caused by nonpoint sources of pollutants.

(1) The assessment shall include a description of the type of problem, an identification of the waters affected (by segment or other appropriate planning area), an evaluation of the seriousness of the effects on those waters, and an identification of nonpoint sources (by category as defined in § 131.11(j) contributing to the problem.

(2) Any nonpoint sources of pollutants originating outside a segment which materially affect water quality within the segment shall be considered.

(3) The results of this assessment should be reflected in the States' report required under Section 305(b) of the Act.

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INTRODUCTION

Activities associated with Element (d)--Non-Point Source Assessment--are closely interrelated with those of Element (b)--Water Quality Assessment and Segment Classifications. These activities are considered a basic step to provide a preliminary indication of the type and extent of planning needed for developing state and areawide water quality management plans.

The water quality assessment and segment classifications are designed to provide general information for all phases of the state water quality management planning process and to identify point and non-point source problem areas which should receive detailed analyses and waste load allocations.

The Environmental Protection Agency's Guidelines for State and Areawide Water Quality Management Program Development (November 1976) indicates that the basic water quality analysis (Chapter 3 of the Guidelines) should include the following non-point source planning information:

> Assessment of non-point sources: The assessment should indicate whether in-stream problems exist related to runoff and what categories of runoff pollution are suspected of causing problems.
>
> Segment classification: Planning for non-point sources is only required in relation to water quality needs. Thus non-point source planning should be undertaken in water quality limited segments including segments classified as water quality limited as part of an antidegradation policy.

Existing/projected wasteloads: Information on existing/projected loads from non-point sources should be used in the process of classifying segments. However, since information on existing non-point source loads is likely to be scanty, this information should be further developed in order to choose non-point source management practices.

Maximum allowable loads: In water quality limited segments, a gross allotment for each parameter of pollutants should be made (under design flow condition) for non-point sources. This allotment provides the basis for establishing pollution reduction levels for various non-point source categories.

This chapter presents some observations and information pertinent to the Element (b) and (d) tasks.

SOURCE CATEGORIZATION

EPA has suggested the following broad categories of non-point sources for use for assessment purposes and for establishment of best management practices:

Agricultural Activities
Silvicultural Activities
Mining Activities
Construction Activities
Urban Runoff
Hydrologic Modifications
Sources Affecting Groundwater
Residual Waste Disposal

The program may address a particular category of activity, such as agriculture and silviculture; a particular pollutant, such as sediment; or particular geographical areas which are determined to be sensitive or critical. Erosion and sediment control may be applicable to practically all of the categories and the procedures and techniques would be somewhat similar. Moreover, a number of the categories may exist on a single land ownership. A proliferation of management agencies and/or requirements should be avoided to the maximum extent possible. A pollutant approach, such as sediment control, may be a more effective basis for selection of best management practices in some cases.

NON-POINT SOURCE PROBLEM IDENTIFICATION

KINDS AND SOURCES OF NON-POINT SOURCE POLLUTANTS

Conservation districts have available a variety of knowledge useful in identifying many non-point source problems (see Chapter One). Problem identification, when carried out to its fullest, may be a time consuming, costly, and difficult task. However, many problems can be identified from readily available information and experience and knowledge of local people.

Tables 1-1 to 1-9 in Chapter One list the kinds and sources of non-point source pollutants generally included in conservation district programs. The tables also show the various soil and water conservation measures which can be used to reduce the pollution.

In the event the water quality analysis reveals the existence of non-point source pollution, the lists, together with local knowledge of the problem area, can help identify the source(s).

Figures 1 through 10 which appear at the end of the chapter illustrate several non-point source problem conditions from which pollutants stem and for which treatments would be needed to reduce the pollution.

INVENTORY AND EVALUATION INDICATORS

Frequently, pollution sources and/or effects are evidenced by certain indicators. On land, the indicators generally are visual, cartographic, or mathematical, while for water they may include visual, chemical, physical, or biological features.

Some of the more common indicators are shown in Table 5-1, Guide to Non-Point Source Inventory and Evaluation. These, together with the lists of kinds and sources mentioned above, would be useful in tracing pollution sources.

RESOURCE INFORMATION

Resource information typically available from conservation district offices is discussed in Chapter One. In addition to soil surveys and interpretations and maps and charts of various kinds, special surveys of critical areas, roads, streambanks, and other areas may be available showing sediment and other pollution sources.

Table 5-1: GUIDE TO NON-POINT SOURCE INVENTORY AND EVALUATION

INVENTORY AND EVALUATION INDICATORS

NON-POINT CONCERN	LAND			WATER			
	VISUAL	CARTOGRAPHIC	MATHEMATICAL	VISUAL	CHEMICAL	PHYSICAL	BIOLOGICAL
EROSION	Gully erosion Farming up & down moderate or steep slopes Intensive farming adjacent to stream w/o intervening strip of vegetation Existing soil & water conservation practices Land cover Land use	Soil survey maps & reports (soil erodibility) Aerial photos Geographical maps Satellite information	Universal Soil Loss Equation for sheet & rill erosion. For downstream sediment yield appropriate sediment delivery ratio must be applied.	Sediment deposition in reservoirs, ponds, stream channels, & flood plains Color Turbidity		Turbidity Suspended sediment Discharge	Changes in biological community structure
ANIMAL WASTES	Size & type of operation Location relative to stream Existing management system			Aquatic life under unusual stress	Dissolved oxygen Biochemical oxygen demand Ammonia	Odor Suspended solids Discharge	Fecal streptococcus Changes in biological community

NON-POINT CONCERN	LAND			WATER			
	VISUAL	CARTOGRAPHIC	MATHEMATICAL	VISUAL	CHEMICAL	PHYSICAL	BIOLOGICAL
NUTRIENTS	Land use Existing soil & water conservation practices Existing animal operations Application of nutrients (surface or subsurface)	Records on quantity & type of fertilizer used Soil survey	Nutrient runoff models* ARM--Agriculture Runoff Model NPS--Non-Point Source Pollutant Loading Model	Excessive algae growth Color Aquatic species indicative of nutrients	Nitrate Nitrite Total Kjeldahl nitrigen Total phosphorous Soluble phosphorous Dissolved oxygen	Turbidity Discharge	Changes in biological community structure
SALINITY (IRRIGATION RETURN FLOWS)	Salt buildup on soil surface or edge of earth canals Absence of salt sensitive vegetation	Soil survey Aerial photos Soil series with salinity problems			Total dissolved solids Chloride	Specific conductance	Changes in biological community structure
PESTICIDES	Land use & cropping in connection with local cultural practices Existing soil & water conservation practices	Quantity & type of pesticide used	Pesticide runoff models* ARM--Agriculture Runoff Model		Analysis for specific pesticides		Changes in biological community structure Pesticide residues in fish tissue

*Models are of potential use but should be applied with caution.

QUANTIFICATION/ASSESSMENT

Quantitative information on sediment yields may be available. In some conservation districts, measurements have been made of sediment accumulation in a reservoir or lake from a known drainage area for a specific period of time. In other conservation districts involved in small watershed projects or river basin surveys and investigations, sediment yield data, based on a representative sample area, would be normally available for the drainage area(s) studied.

Through a cooperating agency, the conservation district(s) may be able to make arrangements for the services of a geologist skilled in integrating erosion rates from numerous sources, adjusting them with sediment delivery ratios, and estimating sediment yield on a drainage area basis.

The technical guides described in Chapter One provide useful information on erosion control and soil loss reductions possible through the application of resource management systems and their associated soil and water conservation practices. These data can be used to estimate the effectiveness of various alternatives in reducing soil losses.

Quantifying the extent of non-point source problems and the associated best management practices needed, are discussed in Chapters Eleven and Eighteen.

Through river basin surveys and investigations, small watershed project undertakings, conservation needs inventories, and special drainage and irrigation studies and surveys, a variety of information on watershed and drainage areas is available to help define the surrounding land areas contributing the non-point source pollution problems.

Figure 1 – Example of a Problem Area needing BMP's

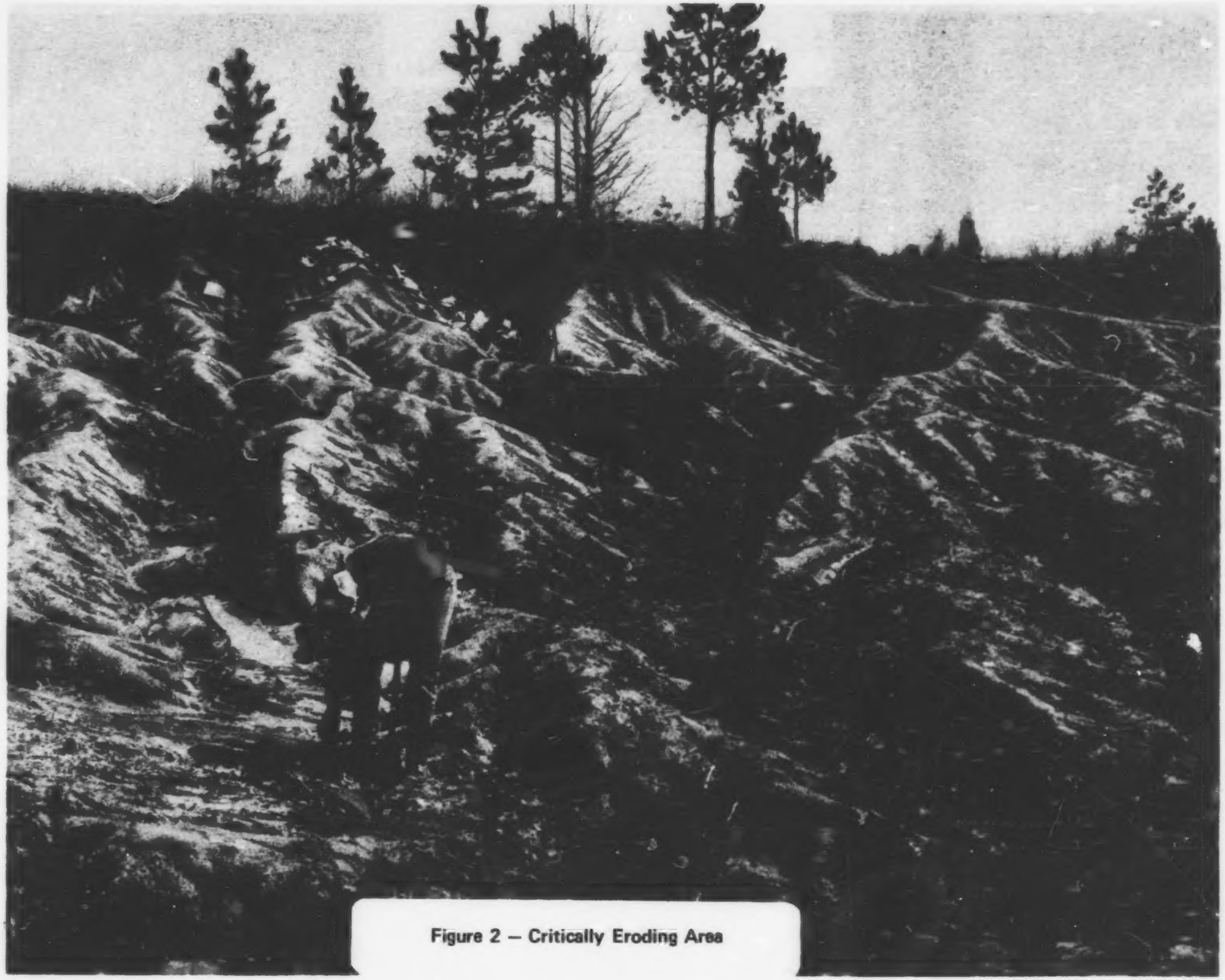

Figure 2 — Critically Eroding Area

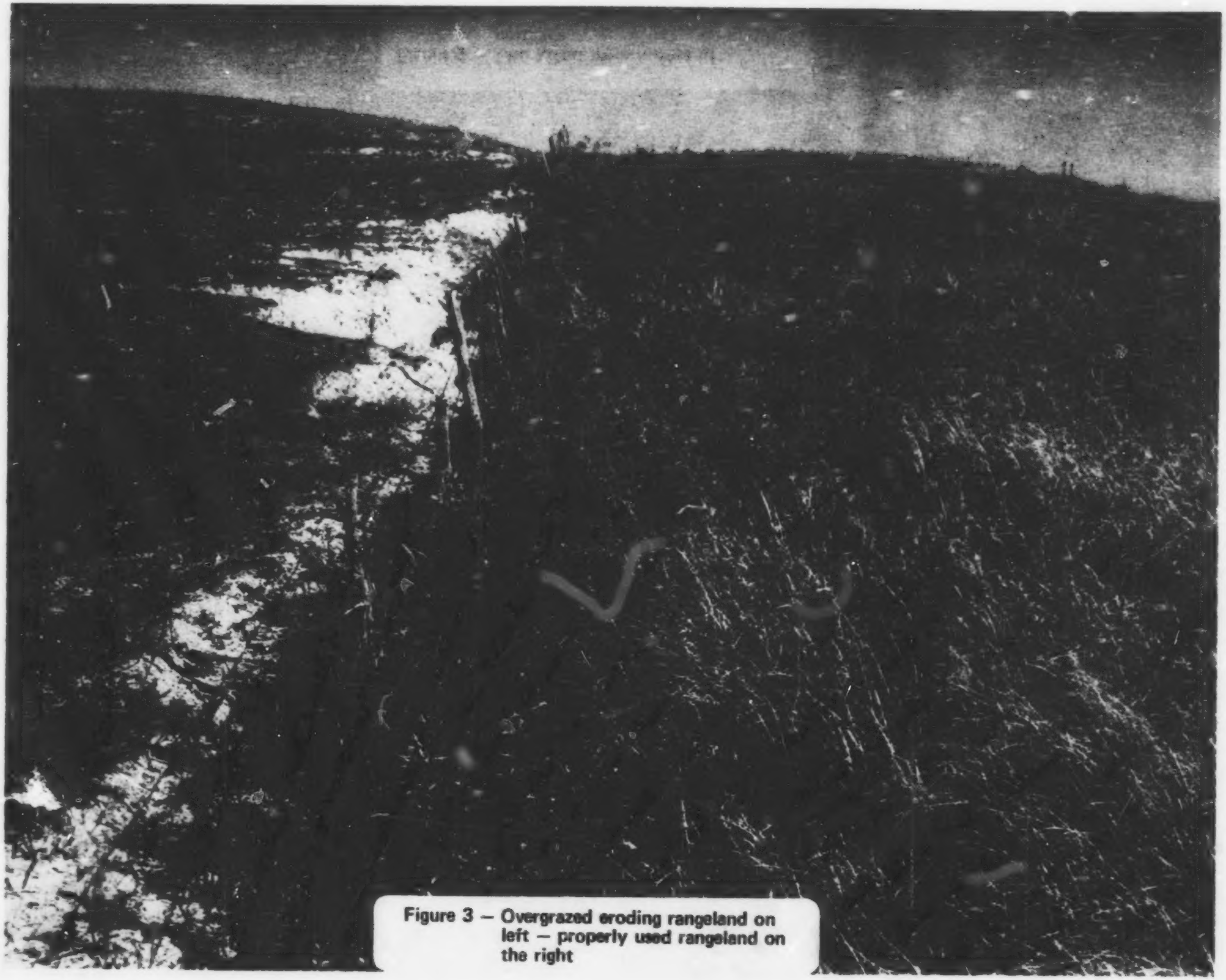

Figure 3 – Overgrazed eroding rangeland on left – properly used rangeland on the right

Figure 4 — Fish killed from misuse of pesticide

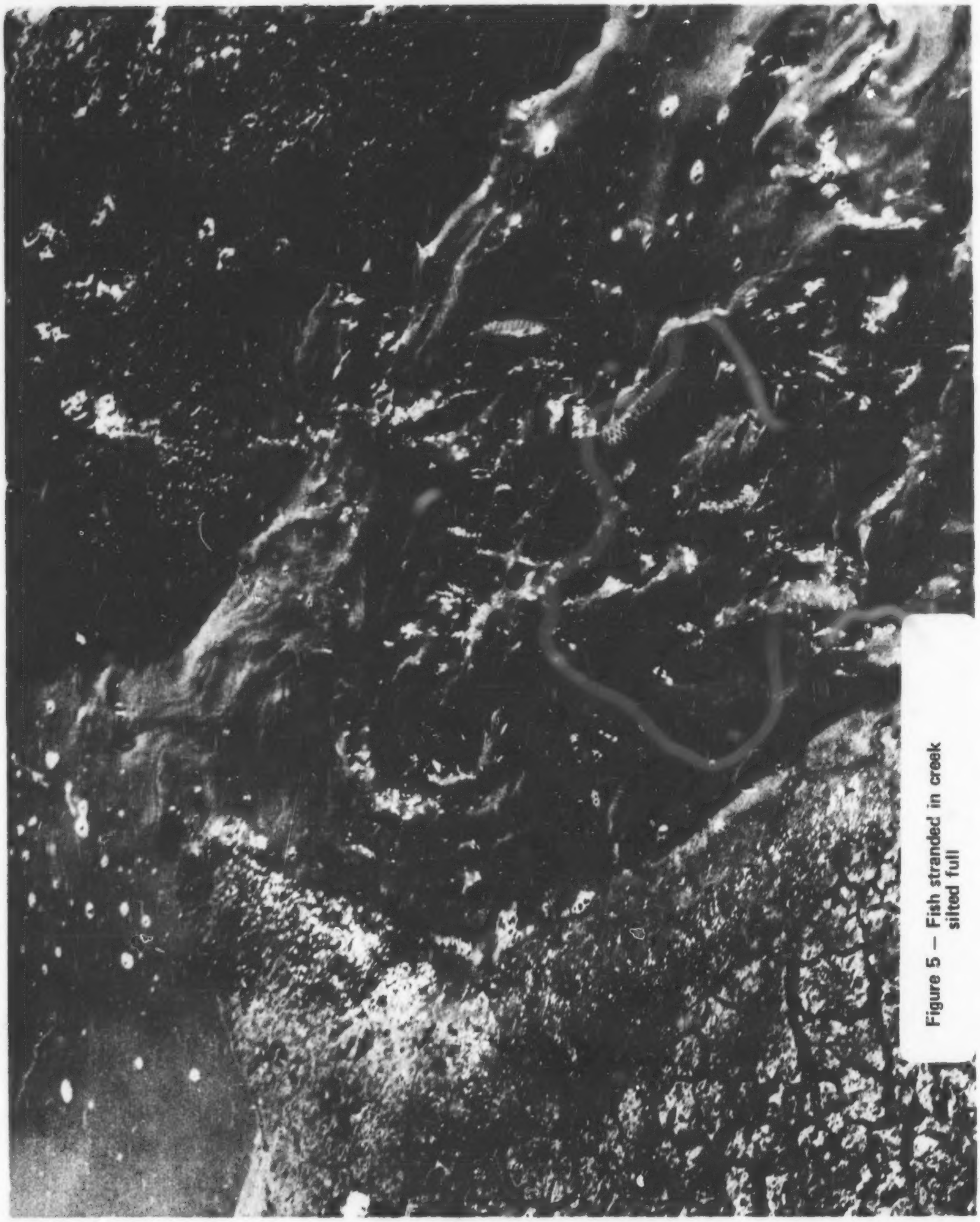

Figure 5 — Fish stranded in creek silted full

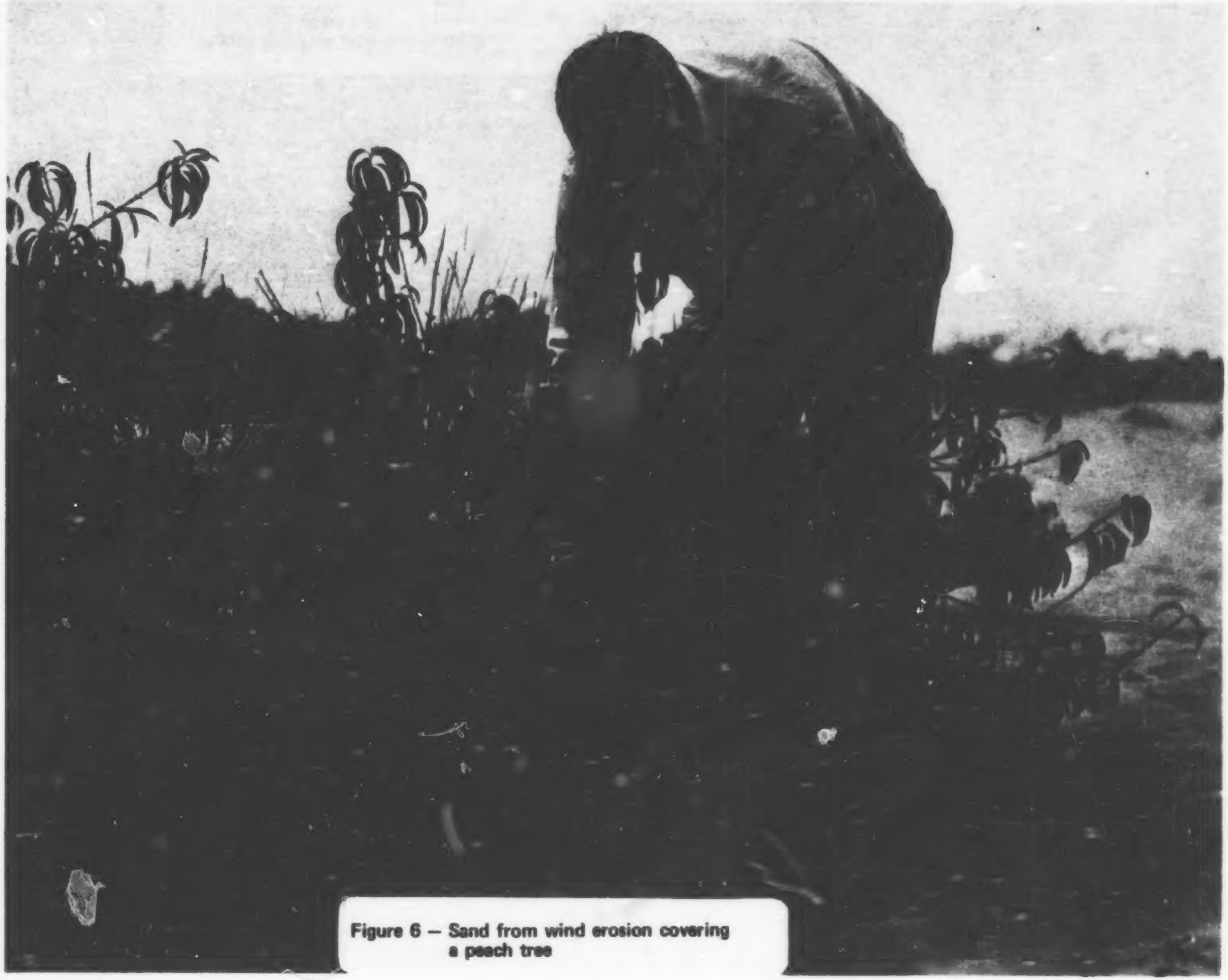

Figure 6 – Sand from wind erosion covering a peach tree

Figure 7 — Flooded Town caused by improper land treatment on the watershed BMP's as shown in Figure 29 will help prevent this.

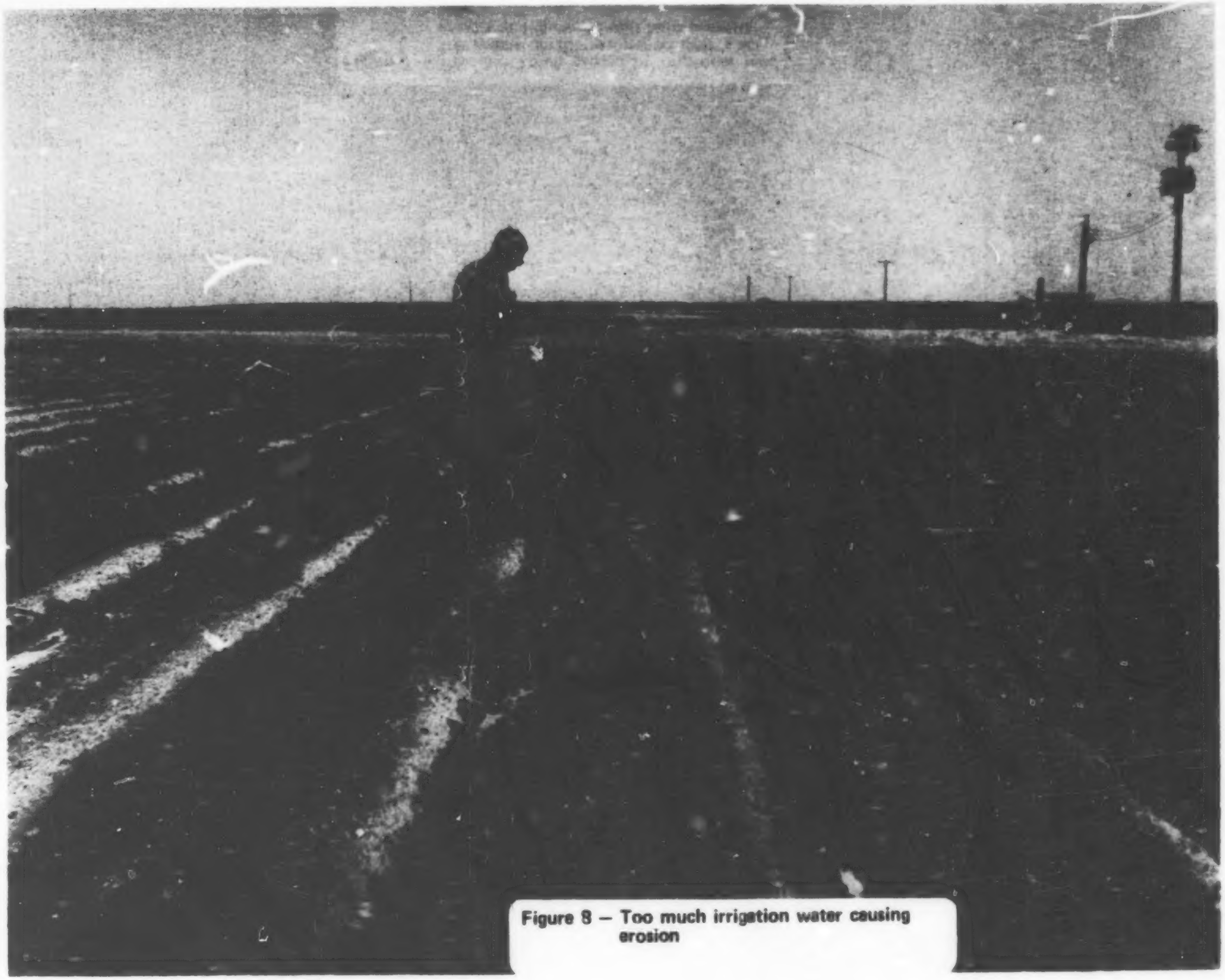

Figure 8 — Too much irrigation water causing erosion

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Figure 9 – Runoff From Feedlots

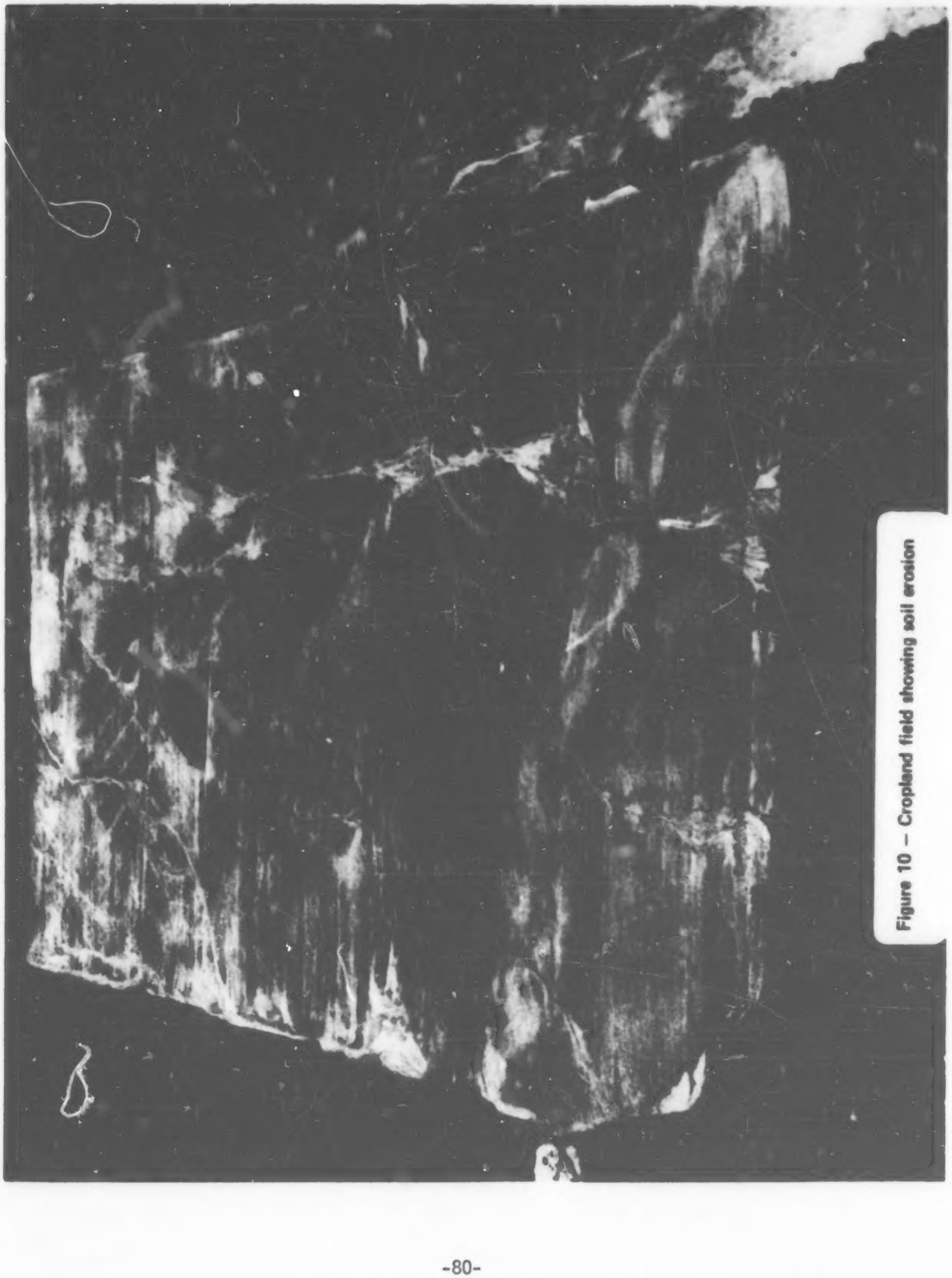

Figure 10 — Cropland field showing soil erosion

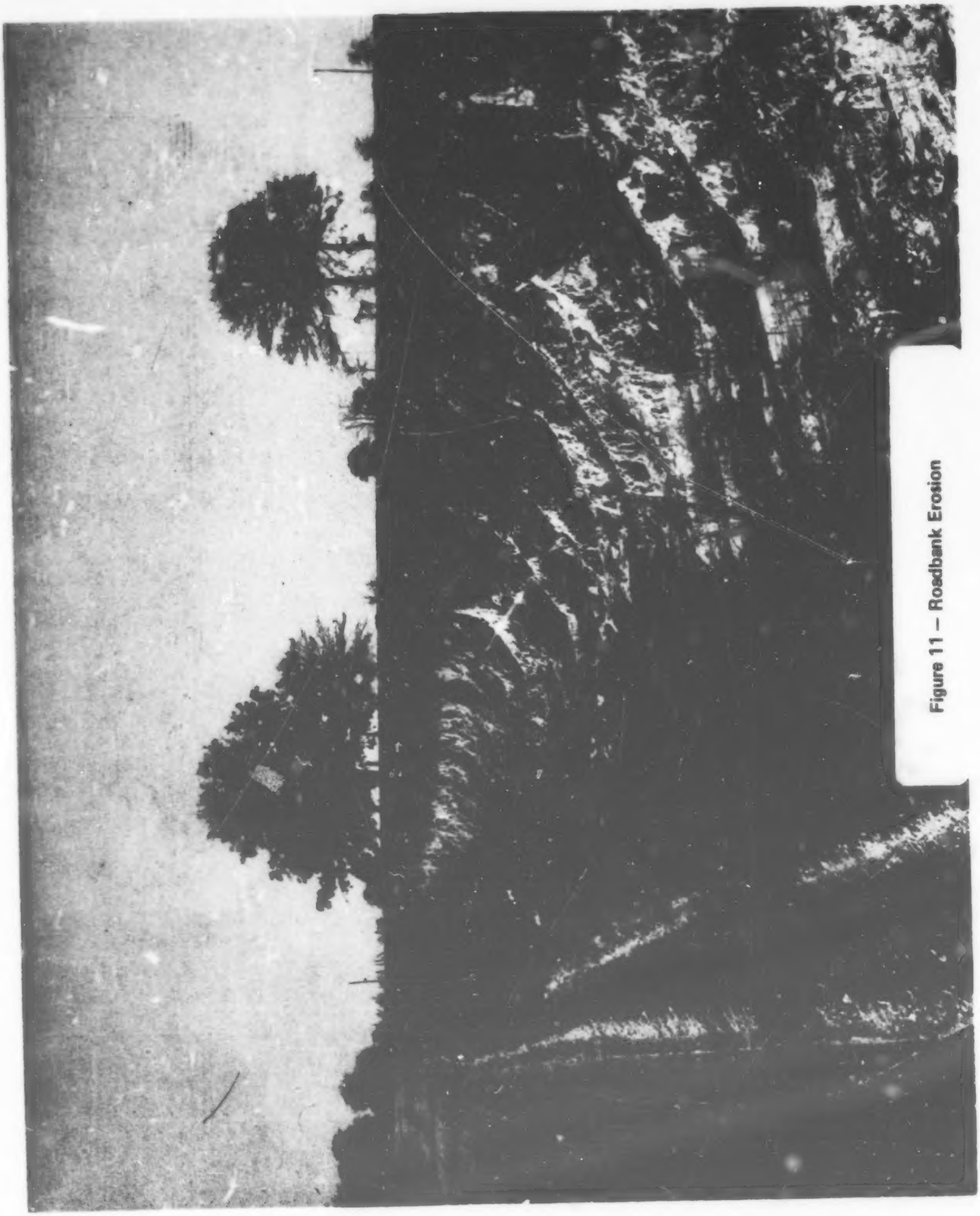

Figure 11 — Roadbank Erosion

CHAPTER SIX

WATER QUALITY STANDARDS

40 CFR Part 131.11

> (e) *Water quality standards.* The applicable water quality standards, including the Statewide antidegradation policy, established pursuant to Section 303(a), (b), and (c) of the Act and any plans for the revision of such water quality standards.

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INTRODUCTION

The Environmental Protection Agency's Guidelines for State and Areawide Water Quality Management Program Development points out that water quality standards are an essential part of the state water quality management system. The standards:

--Publicly define the state's water quality objectives, and hence form the basis for its planning;

--Serve as the basis for determining National Pollution Discharge Elimination System (NPDES) permit effluent limitations for pollutants which are not specifically addressed in the effluent guidelines for pollutants for which the effluent guidelines are not stringent enough to protect desired uses;

--Serve as a basis for evaluating and modifying best management practices (BMP) for control of non-point sources;

--Serve as a basis for judgment in other water quality related programs, including water storage for regulation of stream flow, water quality inventories, control of toxic substances, thermal discharges, cooling lakes, aquaculture, and dredge and fill activities; and

--Contain the state's antidegradation policy.

Water quality standards are applicable to all surface water of the United States, including the territorial seas, and to all sources of pollutants. The standards must be reviewed where appropriate at least once every three years to assure that the standards are consistent with P.L. 92-500 and regulations.

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DISTRICT INVOLVEMENT

Conservation districts should seek an understanding of the process by which water quality standards are established and be aware of the standards set. These standards may well have an impact on district program efforts. Periodic reviews of the standards provide an opportunity to participate in or request public hearings.

CHAPTER SEVEN

TOTAL MAXIMUM DAILY LOADS

40 CFR Part 131.11

(f) *Total maximum daily loads.* (1) For each water quality segment, or appropriate portion thereof, the total allowable maximum daily load of relevant pollutants during critical flow conditions for each specific water quality criterion being violated or expected to be violated.

(i) Such total maximum daily loads shall be established at levels necessary to achieve compliance with applicable water quality standards.

(ii) Such loads shall take into account:

(A) Provision for seasonal variation; and

(B) Provision of a margin of safety which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality.

(2) For each water quality segment where thermal water quality criteria are being violated or expected to be violated, the total daily thermal load during critical flow conditions allowable in each segment.

(i) Such loads shall be established at a level necessary to assure the protection and propagation of a balanced, indigenous population of fish, shellfish, and wildlife.

(ii) Such loads shall take into account:

(A) Normal water temperature;

(B) Flow rates;

(C) Seasonal variations;

(D) Existing sources of heat input; and

(E) The dissipative capacity of the waters within the identified segment.

(iii) Each estimate shall include an estimate of the maximum heat input that can be made into the waters of each segment where temperature is one of the criteria being violated or expected to be violated and shall include a margin of safety which takes into account lack of knowledge concerning the development of thermal water quality criteria for protection and propagation of fish, shellfish and wildlife in the waters of the identified segments.

(3) For each water quality segment, a total allocation for point sources of pollutants and a gross allotment for nonpoint sources of pollutants.

(i) A specific allowance for growth shall be included in the allocation for point sources and the gross allotment for nonpoint sources.

(ii) The total of the allocation for point sources and the gross allotment for nonpoint sources shall not exceed the total maximum daily load.

(4) Where predictive mathematical models are used in the determination of total maximum daily loads, an identification and brief description of the model, and the specific use of the model.

(NOTE: Total maximum daily loads shall not be determined by designated areawide planning agencies except where the State has delegated such responsibility to the designated agency. In those cases where the responsibility has not been delegated, the State shall determine total maximum daily loads for the designated areawide planning area).

(5) No point source load allocation developed pursuant to this section shall be less stringent than effluent limitations standards, or prohibitions required to be established pursuant to Sections 301, 302, 304, 306, 307, 311, and 316 of the Act.

INTRODUCTION

Element (f) calls for a technically complex estimation of the maximum allowable daily waste loads for each water quality limited segment. It involves determinations under both dry and wet weather conditions and may require rather extensive data collection, analysis, and modeling.

An allotment for both point and non-point sources is to be included and an allowance for growth is to be made in the allocations. The non-point source allotment is expected to serve as the base for determining the target level of non-point source loading reduction needed for all non-point sources. The target reduction provides a guide in selecting the degree of abatement needed for each category of existing non-point source generating activities and in choosing best management practices (BMP).

DISTRICT INVOLVEMENT

Conservation districts may have knowledge or judgments regarding natural or background materials which would have an effect on the loadings as well as feasibility of control. In any event, districts should seek an understanding of the process and participate in public hearings with a view toward assuring a reasonable balance between point and non-point source loadings.

CHAPTER EIGHT

POINT SOURCE LOAD ALLOCATIONS

40 CFR Part 131.11

(g) *Point source load allocations.*(1) For each water quality segment, the individual load allocation for point sources of pollutants, including thermal load allocations, for the next five-year period of the plan.

(NOTE: In those segments where water quality standards are established at levels less stringent than necessary to achieve the 1983 water quality goals specified in Section 101(a)(2) of the Act, the Regional Administrator may request the State to provide appropriate information, such as wasteload allocation information which may be relevant in making water quality related effluent limitation determinations pursuant to Section 302 of the Act).

(2) The total of such pollutant load allocations or effluent limitations for all individual point sources in the water quality segment shall not exceed the total allocation for the five-year period for all point sources of pollutants for each segment determined pursuant to § 131.11 (i)(3).

(3) Each pollutant load allocation established pursuant to this paragraph shall incorporate an allowance for anticipated economic and population growth over at least a five-year period and an additional allowance reflecting the precisions and validity of the method used in determining such allowance.

(4) Establishment of pollutant load allocations shall be coordinated with the development of terms and conditions of permits under the National Pollutant Discharge Elimination System and with any hearings pursuant to Section 302 and 316(a) of the Act relating to a source discharging to or otherwise affecting the segment.

(NOTE: Point source load allocations shall not be determined by designated areawide planning agencies except where the State has delegated such responsibility to the designated agency. In those cases where the responsibility has not been delegated, the State shall determine point source load allocations for the designated areawide planning area.)

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INTRODUCTION

The purpose of wasteload allocations is to formally state the actions needed to maintain or improve the quality of the affected waters. They are needed (a) to establish a basis for assigning effluent limitations and for issuing permits to individual dischargers in order to meet water quality standards, and (b) to identify and provide a basis for ranking needs of municipalities.

As in the case of Element (f)--Total Maximum Daily Loads--to which this element is closely related, a technically complex analysis is required to determine point source loadings and the associated controls needed to meet water quality standards. While this element emphasizes point sources, non-point source loadings must also be taken into account to assure that the combined total does not exceed the standards. The long term point source load allocations may depend upon the abatement and control of alternatives for non-point sources. Thus, in some instances, an evaluation of tradeoffs between point and non-point source abatement will need to be considered.

DISTRICT INVOLVEMENT

Conservation districts may have some point source information because of their work with land users on animal waste facilities and irrigation developments. For the most part, however, district involvement under this element would center on seeking an understanding of the process and on assuring a reasonable balance between point and non-point source loading criteria. In the event of tradeoff considerations, districts may be able to provide advice and counsel on achievable non-point source reductions. Public hearings would provide a means for district participation.

CHAPTER NINE

MUNICIPAL WASTE TREATMENT SYSTEMS NEEDS

40 CFR Part 131.11

(h) *Municipal waste treatment systems needs*. (1) The municipal wastewater collection and treatment system needs by 5-year increments, over at least a 20-year period including an analysis of alternative waste treatment systems, requirements for and general availability of land for waste treatment facilities and land treatment and disposal systems, total capital funding required for construction, and a program to provide the necessary financial arrangements for the development of such systems.

(2) The identification of municipal waste treatment systems needs shall take into consideration:

(i) Load reductions needed to be achieved by each waste treatment system in order to attain and maintain applicable water quality standards and effluent limitations.

(ii) Population or population equivalents to be served, including forecasted growth or decline of such population over at least a 20-year period following the scheduled date for installation of the needed facility.

(iii) The results of preliminary and completed planning conducted under Step I and Step II grants pursuant to Title II of the Act.

(NOTE: In the absence of the Title II planning described above, the State is expected to develop the necessary estimates and analyses required under § 131.11 (h)(1).

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INTRODUCTION

Element (h) involves the analysis and development of alternative abatement measures for certain point sources of pollution stemming from municipalities and for which municipal wastewater facilities would be needed.

A variety of facility/techniques for abatement could be applied, such as: (a) flow and waste reduction measures (water conservation), (b) treatment and discharge techniques (biological and/or physical-chemical treatments), (c) wastewater re-use (groundwater recharge, surface water supply enhancement, recreation lakes, land reclamation), and (d) land application (irrigation, infiltration-percolation, evaporation, sludge disposal).

DISTRICT INVOLVEMENT

Conservation districts have information available that would be useful in these analyses, notably on wastewater re-use and land applications. Soil survey and interpretive information could be provided to describe and locate suitable areas for disposal of wastes on land. Erosion and sediment control treatment could be prescribed for disposal areas. Irrigation guides and other technical materials could be of value in analyzing possibilities for irrigation and land reclamation approaches. Information could also be developed for relating quantity and quality of wastes for use on specific soils and crops. The advice and counsel districts could provide concerning the social, economic, environmental, and prime farmland impacts of land application systems would also be valuable.

CHAPTER TEN

INDUSTRIAL WASTE TREATMENT SYSTEMS NEEDS

40 CFR Part 131.11

> (i) *Industrial waste treatment systems needs.* (1) The anticipated industrial point source wasteload reductions required to attain and maintain applicable water quality standards and effluent limitations for at least a 20-year planning period (in 5-year increments).
>
> (2) Any alternative considerations for industrial sources connected to municipal systems should be reflected in the alternative considerations for such municipal waste treatment system.

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INTRODUCTION

The activities associated with Element (i) are similar to those of Element (h), except that here the focus is on industrial point sources requiring waste treatment. Generally, the alternative approaches to abatement include: (a) pretreatment by industries and discharge of wastewater to municipal systems, (b) direct treatment by an industry or groups of industries and direct discharge to the receiving waters, (c) re-use of industrial wastewater, and (d) land application.

DISTRICT INVOLVEMENT

Essentially the same range of conservation district services could be provided here as for Element (h)--soil survey and interpretive information for disposal of the wastes on land; erosion and sediment control treatment for disposal sites; irrigation data; and advice and counsel on the social, economic, environmental, and prime farmland impacts of land application systems.

CHAPTER ELEVEN

NON-POINT SOURCE CONTROL NEEDS

40 CFR Part 131.11

(j) *Nonpoint source control needs.* (1) For each category of nonpoint sources of pollutants to be considered in any specified area as established in the State/EPA agreement (see § 130.11 of this Chapter), an identification and evaluation of all measures necessary to produce the desired level of control through application of best management practices may vary from area to area depending upon the extent of water quality problems).

(2) The evaluation shall include an assessment of nonpoint source control measures applied thus far, the period of time required to achieve the desired control (see § 131.11(m)), the proposed regulatory programs to achieve the controls (see § 131.11 (n)), the management agencies needed to achieve the controls (see § 131.11 (o)), and the costs by agency and activity, presented by 5-year increments, to achieve the desired controls, and a description of the proposed actions necessary to achieve such controls.

(3) The nonpoint source categories shall include: (i) Agriculturally related nonpoint sources of pollution including runoff from manure disposal areas, and from land used for livestock and crop production;

(ii) Silviculturally related nonpoint sources of pollution;

(iii) Mine-related sources of pollution including new, current and abandoned surface and underground mine runoff;

(iv) Construction activity related sources of pollution;

(v) Sources of pollution from disposal on land in wells or in subsurface excavations that effect ground and surface water quality.

(vi) Salt water intrustion into rivers, lakes, estuaries and groundwater resulting from reduction of fresh water flow from any cause, including irrigation, obstruction, groundwater extraction, and diversion; and

(vii) Sources of pollution related to hydrologic modifications, including those caused by changes in the movement, flow, or circulation of any navigable waters or groundwaters due to construction and operation of dams, levees, channels, or flow diversion facilities.

Note: Nonpoint source control needs need not be determined by designated areawide planning agencies where the Governor has determined pursuant to Section 208 (b) (4) of the Act that the State will develop nonpoint source control requirements on a Statewide basis.

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INTRODUCTION TO CONSERVATION DISTRICT INVOLVEMENT

This is a major area of the 208 water quality management planning process in which conservation districts are in a position to play a leading role. Conservation district program coverage, together with available resource information and supporting technical materials, provide a direct linkage to identifying, quantifying, and selecting control measures.

Conservation district programs involve aid in a number of non-point source areas, especially those related to sediment pollutants, plant nutrient and organic waste pollutants (animal wastes), and mineral salt pollutants (irrigation), as well as other source categories.

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Major elements of assistance to land users include:

Inventory and Evaluation Assistance--providing basic inventory data on soils, hydrology, and vegetation and interpretations and evaluations of these data.

Planning Assistance--providing technical assistance to land users in determining alternative land uses and treatment needs and developing a conservation plan reflecting the land use and treatment decisions.

Application Assistance--providing technical assistance to cooperating land users in installing planned conservation practices including necessary site investigations, designs and specifications, construction plans, and layout of practices.

Supporting this assistance are technical guides and other technical materials which include (1) an array of resource information, (2) soil and site information with interpretations for various uses, (3) resource management systems involving combinations of conservation practices and management to improve and maintain resources and reduce pollution, (4) practice standards and specifications, and (5) cost-return and other economic information. (See Chapter One for a detailed description of conservation district programs and materials available.)

BEST MANAGEMENT PRACTICES

INTRODUCTION

The term "best management practices" (BMP) originates with the rules and regulations developed pursuant to the "Continuing Planning Process" required by Section 208 of the Federal Water Pollution Control Act (40 CFR, Part 130). This terminology will be used extensively in water quality management plans with reference to the procedures and methods for controlling non-point source pollution. It is important that the relationships between conservation treatment and application of best management practices be fully understood.

Conservation treatment is site specific and the application of a single practice will seldom achieve all desired effects. The combination of conservation practices selected to meet the needs of a particular land and water problem and to achieve desired effects is referred to as a "resource management system." Best management practices are corollary to this and include those agronomic, managerial, and structural practices which are used either singly or in combination to reduce non-point source pollution to a level compatible with water quality goals. Technical standards can serve as a basis for planning and applying conservation and/or best management practices.

The definition of best management practices quoted from the Federal Register is as follows:

> The term best management practices (BMP) means a practice, or combination of practices, that is determined by a State (or designated areawide planning agency) after problem assessment, examination of alternative practices, and appropriate public participation to be the most effective, practicable (including technological, economic, and institutional considerations) means of preventing or reducing the amount of pollution generated by non-point sources to a level compatible with water quality goals. (40 CFR Part 130)

The following discussion of best management practices has been adapted from Supplement 1 of the Environmental Protection Agency's Guidelines for State and Areawide Water Quality Management Program Development. Information on best management practices as applied to a source category is contained in Appendix 11-1.

DISCUSSION

Best management practices are intended to be an acceptable basis for management of non-point sources to protect water quality. The management techniques (best management practices) are to be determined by state and local government.

Point sources are defined in P.L. 92-500; non-point sources are not defined. By inference, non-point sources are those sources that result in diffuse runoff (seepage, infiltration, and percolation) of pollutants to the nation's waters.

Point sources will be managed under the National Pollutant Discharge Elimination System (NPDES). Permit issuance is based on best practical technology (BPT) and/or best available technology (BAT). Permit issuance and regulatory followup will be carried out by the states or by EPA where authority for NPDES has not been delegated to the states.

Non-point sources will be managed under the authorities of Section 208. This section of the Federal Water Pollution Control Act specifies that the states have the primary responsibility for managing and controlling non-point sources of pollution under federal overview and with federal assistance and cooperation. The state control program may be based upon utilization of best management practices provided that the water quality management program contains adequate measures for the identification of non-point source problems; selection of such practices to correct existing and prevent future non-point source problems; and assuring implementation of approved, planned, or proposed practices.

Because of the variability in sources, topography, climate, soils, etc., no one best management practice will be applicable to all activities or situations. Best management practices must be tailored to the needs of the particular source and to the physical conditions that will govern its application. It is expected that state and local expertise, fully familiar with both the sources and the physical conditions, will be utilized in the final selection of best management practices.

GENERAL CRITERIA FOR CHOOSING BEST MANAGEMENT PRACTICES FOR NON-POINT SOURCES

The Federal Register definition of best management practices states several critiera or tests which should be applied in choosing best management practices (BMP):

1. Best management practices should manage "pollution generated by non-point sources."

2. Best management practices should achieve water quality "compatible with water quality goals."

3. Best management practices should be "most effective in preventing or reducing the amount of pollution generated."

4. Best management practices should be "practicable."

1. Best management practices should manage "pollution generated by non-point sources."

Water pollution sources can be functionally categorized in accordance with man's activities. This type of categorization has been used in Section 208 and 304(e) of P.L. 92-500 in connection with non-point sources. It is considered to be applicable to the selection of best management practices to prevent or reduce pollution from these sources. As a minimum, the state should consider the following activity categories in its establishment of best management practices for non-point sources:

Agricultural Activities
Silvicultural Activities
Mining Activities
Construction Activities
Urban Runoff
Hydrologic Modifications
Sources Affecting Ground Water
Residual Wastes Disposal

The use of this classification of sources should not be interpreted as placing sources into non-point or point categories.

The interrelationship between the activities outlined above should be considered in the selection of best management practices. It may be advantageous to further categorize the non-point sources based on similar control aspects. Utilization of sub-categorization could reduce the amount of duplication in the selection of management practices. Examples of such sub-categorization are: (1) by similar physical conditions (e.g., soils, slope, climate, precipitation patterns); (2) by similar land use or cover condition; (3) by similar activities (e.g., soil disturbance--construction, strip mining, land development); (4) by site-specific characteristics (e.g., all activities in a single area of like condition); and (5) by pollutant to be controlled (e.g., sediments, acidity/alkalinity, oxygen demanding materials).

2. Best management practices should achieve water quality "compatible with water quality goals."

Through analysis of existing water quality data and of newly acquired data where necessary, target levels of abatement should be chosen for each planning area in the state. Best management practices should be selected in terms of meeting these targets. The pollutants that must be controlled should be determined. While best management practices will normally prevent or reduce several pollutants, the final selection of best management practices should be related to those pollutants that must be controlled to achieve water quality goals.

3. Best management practices should be "most effective in preventing or reducing the amount of pollution generated."

Criteria should be selected against which the effectiveness of the best management practices can be related. These criteria (pounds/tons per day/week/month/year; pounds/tons per acre/square mile/basin; etc.) should be related to the reduction of pollutants and achievement of water quality goals. The effectiveness of the best management practices in reducing pollutants should be fully evaluated in terms of the selected criteria.

The reduction or elimination of pollutants in the runoff, seepage, and percolation from non-point sources can materially contribute to the protection of the quality of the nation's waters. In general, there are two options for accomplishing the needed reductions and/or eliminations, namely: (1) collection and treatment of the pollutants,and (2) reduction and/or prevention of the formation, runoff, seepage, and percolation of the pollutants.

Collection and treatment of the runoff, seepage, and percolation of pollutants from non-point sources may be necessary in some cases. Because to do this is generally complex and expensive, collection and treatment is considered to be a final measures to be utilized where other preventive measures will not reach the necessary water quality protection goals.

Best management practices must be technically capable of preventing or reducing the runoff, seepage, or percolation of pollutants. First consideration should be given to those preventive techniques that have been shown to be effective during their past use. New and innovative techniques should be fully analyzed as to their technicial capability for preventing or reducing pollutants prior to their consideration for incorporation into best management practices.

While one practice (measure) may be adequate in some cases, best management practices will generally consist of a combination of practices. Various alternatives should be fully evaluated and the best management practices most effectively achieving the desired level of water pollution control should be chosen. If more than one alternative will achieve the desired effect, the least costly alternative should be chosen.

4. Best management practices should be "practicable."

Implementation of best management practices should be feasible from not only the technical standpoint but also the economic, legal, and institutional standpoints. The practicality of securing early implementation should be evaluated in the selection of best management practices.

The primary goal of best management practices is the protection of water quality, but expensive preventive techniques that will result in little water quality benefits should be avoided. Best management practices must be capable of being implemented within the financial capability of the area, and of the owners or operators of the various sources. Side benefits as well as the installation and operational costs should be included in the evaluation. The final selection of best management practices should take into consideration both the costs of the preventive techniques and the economic benefits (water quality or otherwise) to society that will result from their use.

A number of preventive techniques which may be incorporated in best management practices are already in widespread use within various source categories. These techniques should receive first consideration in the selection of best management practices. As far as possible, the initial implementation of best management practices should be accomplished within existing legal and institutional frameworks. However, if additional legal authority is needed, steps should be taken at an early date to secure the needed authority.

In selecting best management practices for water pollution control, full consideration should be given to their total effect on the environment. Best management practices applied to prevent or reduce water pollution could result in adverse effects on the other portions of the environment (such as the creation of air pollution or solid waste disposal problems), which are not only undesirable but will also delay implementation of best management practices to control water pollution.

Table 11-1 shows examples of best management practices which might typically apply to several different land use categories. Actual identification of the best management practices would need to be done state by state, region by region, and/or conservation district by conservation district. The level of refinement is enhanced at the local level since information on land use and soil groupings can be more specifically interpreted at that level. Selection of specific best management practices to treat a non-point source would be accomplished through a site specific planning procedure.

Table 11-1

Examples of Best Management Practices

Desired Effects:

1. Effective management and control of non-point sources of pollution.
2. Water quality that is compatible with water quality goals.
3. Socially acceptable and economically practical control measures.

EXAMPLE

Land Use/System	Alternatives for Best Management Practices(BMP) (On-site selection of component practices will be made to attain desired effects.)
Cropland	Conservation Cropping System Contour Farming Grade Stabilization Structure Grassed Waterway or Outlet Irrigation Water Management Minimum Tillage Strip Cropping Terraces Other
Pastureland	Pasture Planting Pasture Management Pond Other
Native Grazing Land	Planned Grazing Systems Range Seeding Fencing Pond Other
Surface Mine Area	Reclamation of Surface Mined Land Diversions Grassed Waterway Critical Area Planting Tree Planting Other
Urbanizing Land	Critical Area Planting Debris or Sediment Basin Diversion Grade Stabilization Structure Grassed Waterway Other

LAND USE	BEST MANAGEMENT PRACTICES
Wildlife Land	Wildlife Upland Habitat Management Wildlife Wetland Habitat Management Streambank Protection Other
Woodland	Woodland Improvement Tree Planting Woodland Improved Harvesting Access Road Other
Stream System	Grade Control Structures Streambank Protection Other Hydromodifications
Road System	Critical Area Planting Terracing Vegetative Soil Stabilization Other
Waste Management System	Critical Area Planting Diversion Fencing Waste Treatment Lagoon Waste Storage Pond Other

Standards and specifications for the above practices and many more are found in the technical guides.

CONTROL NEEDS (BEST MANAGEMENT PRACTICES)

IDENTIFICATION

From the information contained in conservation district technical guides and other technical materials (Chapter One), control needs for a number of the non-point pollution sources (Chapter Five) can be identified.

Photographic examples of some of the treatments (best management practices) which can be applied to reduce non-point source pollution are included at the end of this chapter (Figures 12 through 29). Appendix 11-2 shows in schematic form the best management practices selected for control of agricultural non-point pollution sources in Florida.

QUANTIFICATION

The detailed practice standards and specifications of the district are directly applicable to establishing and quantifying best management practices, particulary for sediment, organic (animal waste), and mineral salt (irrigation) pollutants.

Several techniques are available for estimating the kinds and amounts of best management practices needed for the agriculturally, silviculturally, and irrigation related sources of pollution. Sediment pollutant aspects of urban, surface mine, construction, and residual waste disposal related sources would probably require special studies as would hydrologic modification related sources.

Agriculturally, Silviculturally, Irrigation Related Sources

Basically, the procedure most often used to quantify pollution measures needed involves the use of representative samples of a watershed, basin, or county to establish the interrelationships between land uses (or management systems) and the kinds of soils (usually soil groupings) to ascertain the extent of needed resource management systems/best management practices and associated conservation practices. The data is then expanded to the area being sampled. Of course, should a small unit be studied such as a small sub-watershed area, complete coverage could be made.

Unless allowances are made in the estimating process for resource management systems/best management practices already applied, the results derived would be for total best management practices needs. Records are available in the conservation district to estimate conservation or best management practices applied to date, which can be subtracted from the total needs to yield the remaining best management practices needs (the non-point source control needs.)

Any of the techniques outlined below should yield reasonably accurate estimates for program planning and development purposes although the techniques presented in (b) and (d) might perhaps be more reliable since they most closely represent field conditions.

Data developed from these sources would be reliably indicative of sediment, organic (animal waste), and salt (irrigation) pollutant control needs. The information developed would also be of considerable benefit in considering nutrient, pesticide, and pathogen pollutant problems.

Depending on how the sampling was done, some special studies might be needed as an adjunct to the technique selected to determine sediment control needs for such items as roads and streambanks.

Some suitable quantification techniques follow:

(a) USDA Conservation Needs Inventory Samples

USDA's Conservation Needs Inventory was developed on the basis of samples, statistically drawn to reflect a county as the base unit. Should the non-point source area being studied be county or multi-county in size, the Conservation Needs Inventory samples would be applicable.

Each sample was the subject of a soil survey and a detailed land use determination, the basic data needed for determining the resource management system/best management practices makeup for the sample and by expansion for the area being studied.

One disadvantage of the Conservation Needs Inventory samples is that the land use data is several years old (circa 1967) and might have changed, requiring field work to update the information. An advantage of the Conservation Needs Inventory sample approach is that the data is computerized (Iowa State University) and can be used for a variety of interpretations and evaluations.

(b) Conservation Plan Data

If the area being studied has a number of land units on which conservation plans have been developed with assistance from the local conservation district, information from representative plans could be selected by the district for analysis. Expansion of the sample data to the area being studied would yield the total needs.

An advantage of this procedure is that it would be largely office-oriented and be representative of actual land unit operations.

(c) "Typical" Farm Enterprise Sample(s)

Should the area being sampled contain a relatively small variety of farms, it might be possible to select (or construct) one or more "typical" farms as samples. If soil and land use information is available on the sample, the necessary best management practice needs could be established and expanded to the area in question. If not, field work would probably be required to gain these data.

(d) Sub-Watershed Study

A small sub-watershed(s) could be selected as representative of a larger watershed or basin as the unit of study for expansion purposes. Where relatively uniform topography, climate, soils, and land use exist, this approach would work well. Field work would probably be required to establish the land use/soil/water quality interrelationships for determining best management practices.

An advantage of this technique would be that adjunctive studies such as roadside, streambank, and surface mine erosion surveys and other investigations (nutrients, etc.) could be undertaken concurrently.

(e) Point Samples

Another technique which could be applied is the use of "point" samples statistically drawn and/or randomly selected for either a sample area or the toal area being studied. Field work would be required to determine the land use/soil/ water quality interrelationships for determining best management practices.

(f) Soil/Erosion Potentials

Through the use of either a detailed soil survey or general soil map, estimates of erosion and associated sediment problems could be determined either on a sample or general basis. While this might yield good data on erosion potentials, the technique would not readily adapt to land use determinations without considerable field work. Consequently, this would make the best management practices needs determination more difficult and probably less reliable.

Urban, Mining, Construction, Waste Disposal Related Sources (Sediment Pollutants)

Unless the sediment pollutant aspects of the above mentioned sources were included in the sample/detailed study procedure(s) outlined in the previous section, either as a part of or as adjunctive work, special efforts would be needed to quantify best management practices needs.

Most conservation districts have done some work on urban-suburban erosion and sediment control. This information, pooled with that of the city/ county planning and operating agencies, should be sufficient to determine the nature and extent of the problem. With these data, the conservation technical guide materials could be applied to estimate best management practices needs. Conservation district assistance on proper site locations and layout work for new urban development could aid materially in reducing sediment pollution.

Similarly, many conservation districts have provided assistance on erosion and sediment control of surface mined areas. Most districts will have estimates on these areas or current aerial photography from which the extent of the problem can be ascertained. State mining and/or geology agencies would also be a source of data. Through use of the conservation district technical materials, the extent of best management practices needed can be determined.

Construction activities would be largely associated with new endeavors and new undertaking, and estimates would probably need to be based on trend information or expansion/growth projections. Planning commissions (city, county, regional, state) and state and federal operating agencies (highways, industrial commissions, etc.) would be good sources of data. Construction activities might need to be categorized into such activities as housing, industrial, airports, highways, etc. General needs for best management practices can be generated for these categories from conservation district technical materials. The more site-specific the information, the more accurate the best management practices estimates would be.

Conservation districts can provide soil interpretations for location of waste disposal areas and information on erosion and sediment control features associated with such locations. State, county, and/or city waste disposal agencies would probably be the best source of data on the number and/or location of disposal areas. With this information, districts can estimate best management practices needed for sediment control.

Sources Related to Hydrologic Modifications

The Environmental Protection Agency describes hydrologic modifications resulting in non-point source pollution as those activities that either directly or indirectly affect, or have affected, the natural stream flow and associated ground water regime detrimentally. The development activities included are listed as (a) channel modifications (clearing and snagging, excavation, realignment, floodways, retarding basins, debris retention basins, and new or deepening drainage ditches); (b) impoundments (run-of-the-river and storage reservoirs); (c) all types of ground disturbing construction activities which, if not given adequate design consideration, may result in modifications to existing drainage flows resulting in sources of water pollution; (d) resource recovery operations (sand, gravel, and other mineral recovery operations); and (e) withdrawal and recharge activities.

The Environmental Protection Agency recognizes the interrelationship between land and water management by indicating that best management practices applicable to agriculture, silviculture, and construction can also influence hydrologic modifications.

The description of hydrologic modifications is so broad as to make it difficult to present a quantification procedure for this activity. Conservation districts do have a considerable body of knowledge on land and water resources (Chapter One). Their activities include river basin studies and investigations, watershed and flood prevention project undertakings, and individual and group drainage and irrigation developments. Technical handbooks and manuals are used for design and layout purposes for land and water related applications. For many hydrologic modification activities, best management practices information is available.

Presumably the areas in which hydrologic modifications would be a problem would be narrowed in the segment classification process required by Element (b). Determining the nature and extent of the modifications may require a special field study.

A judgmental estimation procedure is another possible means of determining problems. Conservation districts maintain working relationships with a variety of federal and state water resource agencies and with other entities such as levee, drainage, irrigation, and other special water resource oriented districts. In the estimation procedure, the state water quality management/208 agency, the conservation district(s), and public interest groups could meet to review relevant maps and other data with a view toward determining the nature and extent of hydrologic modifications causing non-point source pollution.

In either procedure, once specific problems were identified, the information contained in the technical guide and standards would in most situations permit the quantification of best management practices.

EVALUATION

Introduction

Element (j)--Non-Point Source Control Needs--requires an evaluation of all measures necessary to produce the desired level of control through application of best management practices. The evaluation is expected to include an assessment of non-point control measures applied thus far, the period of time required to achieve the controls, the proposed regulatory programs to achieve the controls, the management agencies needed to achieve the controls, and the costs by agency and activity.

This section discusses ways in which conservation districts can aid in the evaluation and includes certain other factors not listed in Element (j) but which are considered germane.

Measures Applied/Remaining Needs

Conservation districts have records of accomplishment available for those land users who avail themselves of district planning and application assistance. In addition, an annual estimate of conservation practices "on-the-land" for all lands in the district is available. This information, coupled with that of other resource groups provides an excellent set of data from which to estimate measures applied and remaining needs.

Time Required to Achieve Controls

There are a great variety of factors which need consideration in estimating the time required to achieve control. Among them are ownership patterns, trends in land use changes, the nature and scope of conservation practices, the use of incentives and/or disincentives, and the availability of technical assistance.

Ownership patterns such as low income or absentee/tenant may prove to be a problem in achieving controls--not because of a lack of desire, but because of economics or unawareness.

Changes in land use will probably trigger a new or different set of best management practices to deal with the new situation. For those areas experiencing rapid change either in types of enterprise or other land use considerations, special attention will be dictated.

The nature and scope of the conservation practices (best management practices) will influence the time required to achieve controls. If they are widespread and expensive to apply, a longer time frame may be required. The mix of "annual" and "permanent" practices must also be considered. The "annual" practices may need to be applied each year as a key part of the best management practices (e.g., contour farming). The "permanent" practices are largely permanent in name only, for they usually require maintenance and most have a life span after which they lose their effectiveness and need to be re-installed.

The use of incentives/disincentives is another important consideration. To require a land user on a hill farm removed from "polluted" water to spend his money for corrective treatments may be conceptually correct, but it is frequently hard to sell.

As a general rule, analyses of these situations can best made at the local level where the problems can be brought into sharper focus. Conservation district officials can provide invaluable advice and counsel in this regard, particularly in estimating participation in a non-point source control program and the time required to achieve controls.

Some additional discussion of the time needed to achieve controls and how conservation districts may help is included in Chapter Fourteen.

Incentives/Disincentives

Conservation districts believe that the question of incentives/disincentives is a key item influencing the attainment of non-point source water quality management objectives.

Disincentives such as tax penalties and land use regulations could be, and are being, used. Conservation districts feel that the incentive approach, utilizing a reasonable cost sharing program, can be effective and is desirable. The use of penalties or regulations should be reserved for situations where the incentive/voluntary approach will not accomplish the desired results. Conservation districts in several states are furnishing assistance to implement sediment and erosion control laws, regulations, ordinances, etc., for activities such as urban construction and surface mine reclamation.

Several cost sharing programs are described below.

Federal Cost Sharing Programs (U.S. Department of Agriculture)

Agricultural Conservation Program (ACP)

The Agricultural Conservation Program is the principal channel through which the federal government shares with farmers and ranchers the cost of carrying out approved soil, water, woodland, and wildlife conservation practices on their land to help maintain the productive capacity of American agriculture. It is administered by the Agricultural Stabilization and Conservation Service.

County agricultural stabilization and conservation committees, working with county program development groups, have full authority to develop each county's practices. Counties first identify their conservation needs and then offer solutions. As in the past, the county programs are to be reviewed and approved by state agricultural stabilization and conservation committees. Funding for the program is authorized on an annual bases by Congressional appropriation.

The Agricultural Conservation Program also helps provide required technical service for certain practices through special arrangements with the Soil Conservation Service, the state forester, the county agricultural extension agent, and others. Long term agreements are authorized as a part of the program based on conservation plans developed in cooperation with the conservation district in which the lands are located.

Forestry Incentives Program (FIP)

The Forestry Incentives Program is designed to provide cost sharing assistance to private, non-industrial forest owners for the purpose of timber production. The program is administered by state and county agricultural stabilization and conservation committees and state forestry agencies.

Through the Forestry Incentives Program, an eligible landowner may receive from 50 to 75 percent of the cost of planting trees or improving a stand of forest trees. State forestry agencies prepare forest management plans for the participants who are required to follow the plan as a condition of cost sharing. The program is operated in "designated counties" in all states, Guam, Puerto Rico, and the Virgin Islands. Counties are designated for the program by state agricultural stabilization and conservation committees after consultation with the state forester. Approvals of cost sharing to individuals are made by county agricultural stabilization and conservation committees on the basis of the priority of the request and availability of funds. Funding for the program is authorized on an annual basis by Congressional appropriation.

Water Bank Program (WB)

Under the Water Bank Act, the Secretary of Agriculture is authorized and directed to formulate and carry out a continuous program in important migratory waterfowl and nesting and breeding areas to prevent the serious loss of wetlands and to preserve, restore, and improve fresh water and and adjacent areas as designated in the Act. Eligible persons in the selected areas having eligible wetlands may enter into 10-year agreements, with provision for renewal, to receive annual payments for the conservation of water and for meeting other purposes of the Act.

The Water Bank Program on specified farm, ranch, or other lands applies to wetlands identified in a conservation plan developed in cooperation with the soil and water conservation district in which the lands are located. Terms and conditions are set forth by the Secretary of Agriculture and technical assistance is furnished by the Soil Conservation Service. Funding for the program is authorized on an annual basis by Congressional appropriation.

Emergency Conservation Measures (ECM)

Emergency conservation measures are authorized by P.L. 85-58, enacted June 21, 1957, and administered by the Agricultural Stabilization and Conservation Service. This law authorizes emergency measures in any state or area in which it is determined by the county agricultural stabilization and conservation committee, in consultation with the state agricultural stabilization and conservation committee, that emergency conservation measures are needed to control severe wind erosion on farmlands or to rehabilitate farmlands damaged by wind erosion, floods, hurricanes, or other natural disasters.

The law also provides for the allocation of emergency funds. The funds are used to share with farmers and ranchers the cost of emergency conservation measures needed to meet the new conservation problems caused by the disaster in a given area. The law requires, however, that the diasaster must have created new conservation problems, which, if not treated, would: (1) impair or endanger the land; (2) materially affect the productive capacity of the land; (3) represent unusual damage which, except for wind erosion, is not of the type likely to recur frequently in the same area; and (4) be so costly to repair that federal assistance is or will be required to return the land to productive agricultural use. Technical assistance for certain practices is provided by the Soil Conservation Service.

Great Plains Conservation Program (GPCP)

The Great Plains Conservation Program is authorized by P.L. 84-1021 and is administered by the Soil Conservation Service. Authority for the program terminates on December 31, 1981.

The program provides assistance under long term contracts to land users in 469 designated counties of 10 Great Plains states. It is designed to protect and improve soil, water, plant, and wildlife resources of the Great Plains area which is plagued with recurring drought and wind erosion. Installation of complete conservation treatment and management systems on farms and ranches helps stabilize individual enterprises and consequently the local economy.

The Great Plains Conservation Program is coordinated with other federal, state, and local agencies through established state and county Great Plains Conservation Program committees. Represented on the state Great Plains committee, which meets at least annually, are: Farmers Home Administration, Agricultural Stabilization and Conservation Service, Federal Crop Insurance Corporation, Forest Service, Cooperative Extension Service, and the Agricultural Experiment Stations. Representatives of other state and federal agencies are invited to participate as determined by the committee. The Agricultural Stabilization and Conservation Service is directly involved in review of individual cost sharing and conservation districts review all contracts, set planning priorities, and serve on the Great Plains committees.

Special Wellton-Mohawk Salinity Control Program

Special Soil Conservation Service involvement in salinity control in the Colorado River Basin began late in 1973 with the agency's participation on the Advisory Committee on Irrigation Efficiency. The purpose of this committee was to determine and implement means of increasing on-farm irrigation efficiencies to reduce irrigation drainage return flows from the Wellton-Mohawk Irrigation and Drainage District in Arizona.

On June 23, 1974, P.L. 93-320--entitled "Colorado River Basin Salinity Control Act"-- was enacted. It authorizes the U.S. Department of Agriculture to cooperate with the Department of the Interior in achieving the goal of salinity control. The Soil Conservation Service was assigned leadership responsibilities for the U.S. Department of Agriculture. An operations handbook was issued in July, 1975, designed for field use in developing conservation plans in cooperation with conservation districts and in preparing and executing contracts with eligible landowners and operators (cooperators) for installation of practices directly contributing to the objectives of the program.

U.S. Department of the Interior (Bureau of Reclamation) funds are transferred to the Soil Conservation Service for federal cost sharing of 75 percent of the installation of conservation practices. The planned on-farm irrigation efficiency improvement plan is expected to obtain a salt balance between the diversions into the Wellton-Mohawk area and drainage return flows to the river in the near future (1985-1990), thereby reducing the saltload into the lower Colorado River by about 500,000 tons annually.

State/Local Cost Sharing Programs

In addition to federally funded and administered cost sharing programs, several state and/or local governments have initiated programs. Following are some examples.

Iowa Erosion and Sediment Control Law

Iowa's erosion and sediment control law (Iowa Soil Conservation District Law, Chapter 467A, Code of Iowa, 1975) declares accelerated soil erosion a nuisance, requires abatement of such nuisance when a complaint is filed with the commissioners of a conservation district, and provides for adoption by districts of soil loss limit regulations which are approved by the State Soil Conservation Committee. The law also provides for cost sharing for installation of needed measures to control erosion and for penalties when the landowner fails to initiate necessary work by the specified time.

The total amount available for cost sharing during each year of the 1973-75 biennium was $2,000,000. Some $2,500,000 was appropriated for the 1975-76 fiscal year, with $4,000,000 requested for the 1976-77 fiscal year.

The cost sharing program is divided into three categories. One category provides 50 percent cost sharing to landowners who voluntarily install conservation practices. The special projects category for watersheds above public lakes provides cost sharing at the 50 percent rate. The law further provides that landowners can recieve 75 percent of the cost of installing a practice when the landowner is under mandate of the soil conservation district to abate a soil erosion nuisance under Chapter 467A.48 of the Code.

The districts generally provide 50 percent of the cost of installing the conservation practice when no federal cost sharing is used and none where federal assistance is used.

Land and Water Development Assistance Program--Lower Elkhorn Natural Resources District, Nebraska

In 1973, the threatened elimination and/or decrease of federal assistance programs led the Lower Elkhorn Natural Resource District (Norfolk, Nebr.) to believe that financial assistance for cost sharing should be made available through local and/or state funding.

Accordingly, the district launched a "Land and Water Development Assistance Program" in April, 1973, to seek proper development and utilization of the land and water resources in the district. The program provides a portion of the actual cost of each authorized practice based on the district's best estimate of the public benefit derived from each practice(s). Funds are provided by the counties within the natural resource district.

The program is administered by the Lower Elkhorn NRD and technical assistance for practice installation is provided by USDA's Soil Conservation Service. A resource conservation plan for the operating unit is a requirement for participation.

Assistance is offered for livestock waste control systems, multipurpose dams, diversions, terraces, grassed waterways, tile outlets for terraces, permanent native grass, road structures, park and recreational development, and lands for wildlife.

Soil and Water Conservation District--Lafayette County, Wisconsin.

The Lafayette County Soil and Water Conservation District (Wisconsin) inaugurated a district-wide cost sharing program in 1974 with $50,000 furnished by the county. In part, the motivation was the "off again/on again" problem of federal cost sharing program assistance. The establishment of a more stable and consistent program was the chief objective.

Close cooperation has been maintained with the cost sharing program administered by the Agricultural Stabilization and Conservation Service. Generally, the same practices, rates of cost sharing, technical standards, and other requirements apply to both programs although they are separately administered.

Suggested Features of an Incentives Program

The several cost sharing programs presented above have been very helpful in achieving conservation treatment on rural lands and in helping reduce non-point source pollution. They also afford a variety of operational experiences on which a water quality improvement incentives program might be based. Conservation districts suggest that such a water quality program include the following features:

Cost sharing should be based on a contract and/or long term agreement with a "set-aside" fund provision to guarantee fund availability to the land user and to permit the land user to make orderly land use adjustments and best management practices installations with the least interruptions for his enterprise.

The contract/long term agreement should be based on a conservation plan to be approved by the applicable conservation district and meeting conservation district technical standards and specifications.

Necessary technical assistance should be provided to the land user to assist in the development of the conservation plan and in the planning, design, and layout of the best management practices.

The program should carry with it the necessary funding and manpower commitments to meet target abatement dates.

Costs/Benefits

A variety of costs will need to be considered in structuring a non-point source pollution control program. From information available through conservation districts, estimates can be generated for the following:

--Cost of application (installation) of best management practices
--Cost of operation and maintenance of best management practices
--Cost of replacement of best management practices (life span of practices)
--Cost of technical assistance needed to develop conservation plans and to plan, design, and lay out best management practices
--Cost of administering a non-point source program at the local level
--Cost of incentives program and rate(s) of cost sharing at the local level
--Costs to land users in making enterprise adjustments

Some form of benefit/cost analysis is an essential ingredient in the program formulation process and in the selection of non-point source controls. The relationship between total benefits and the private and social costs, as well as the impacts on groups affected, is basic to the decision making process.

In making such an analysis, Section 5 (Economic Considerations) of "Control of Water Pollution from Cropland, Volume I" (available from Environmental Protection Agency as Report No. EPA-660/2-75-026a and from

U.S. Department of Agriculture-Agricultural Research Service as Report No. ARS-H-5-1) would be of considerable help. Representatives of the state land grant college and the state representative of the U.S. Department of Agriculture's Economic Research Service could provide particularly valuable aid in a benefit/cost analysis.

Other

A discussion of various types of non-point source control programs is contained in Chapter Fifteen and on conservation district management agency capabilities in Chapter Sixteen.

BEST MANAGEMENT PRACTICES HANDBOOK

At some stage of program development, consideration needs to be given to the matter of how best management practices requirements are to be presented to the public in general and to affected land users in particular. Several means are available to accomplish this--information releases, incorporation into state law or county or municipal ordinances, detailed regulations, etc.

One approach which might be considered is development of a "Best Management Practices Handbook." Following is a suggested outline for a local best management practices handbook.

Suggested Outline for a Local Best Management Practices Handbook

Section 1. A definition of the non-point source categories and the various land uses/conditions to which the program applies. A pictorial display of the non-point sources in the district and treatment (BMP's) for their correction (specific to district).

Section 2. A discussion of BMP's and their relation to local conservation districts.

Section 3. The procedure for assisting landowner or operator to develop a plan and select BMP's for dealing with specific non-point sources. (Local examples of BMP plans.)

Section 4. Discussion of resource management systems--the practice or combination of practices needed to treat specific problems and which constitute BMP's for the site or area.

Section 5. Standards and specifications for conservation practices from conservation district technical guides and other technical materials that can be planned and applied as BMP's to correct local non-point sources.

Section 6. Information on the incentives program (if included in non-point source program) and the rates of cost sharing.

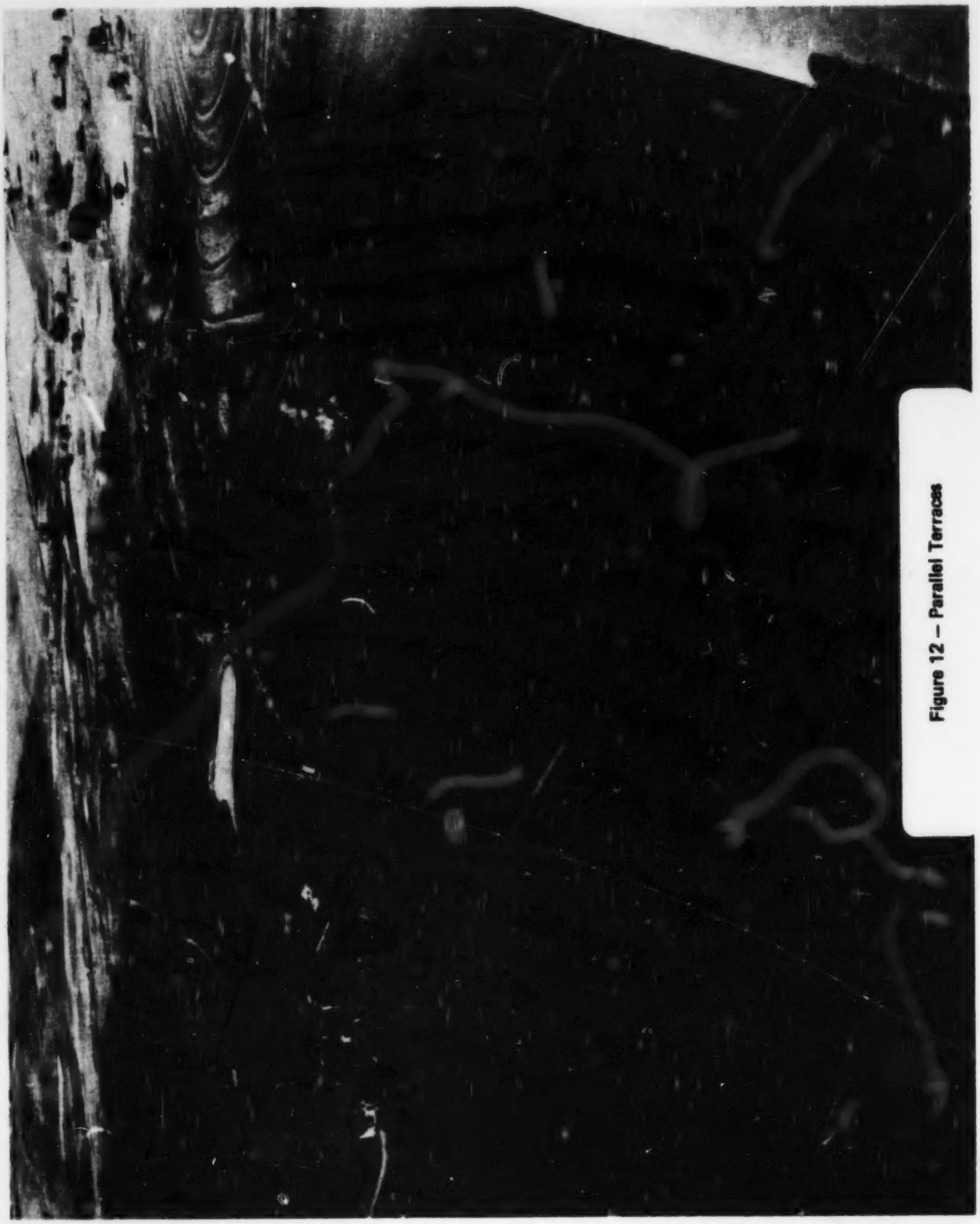

Figure 12 — Parallel Terraces

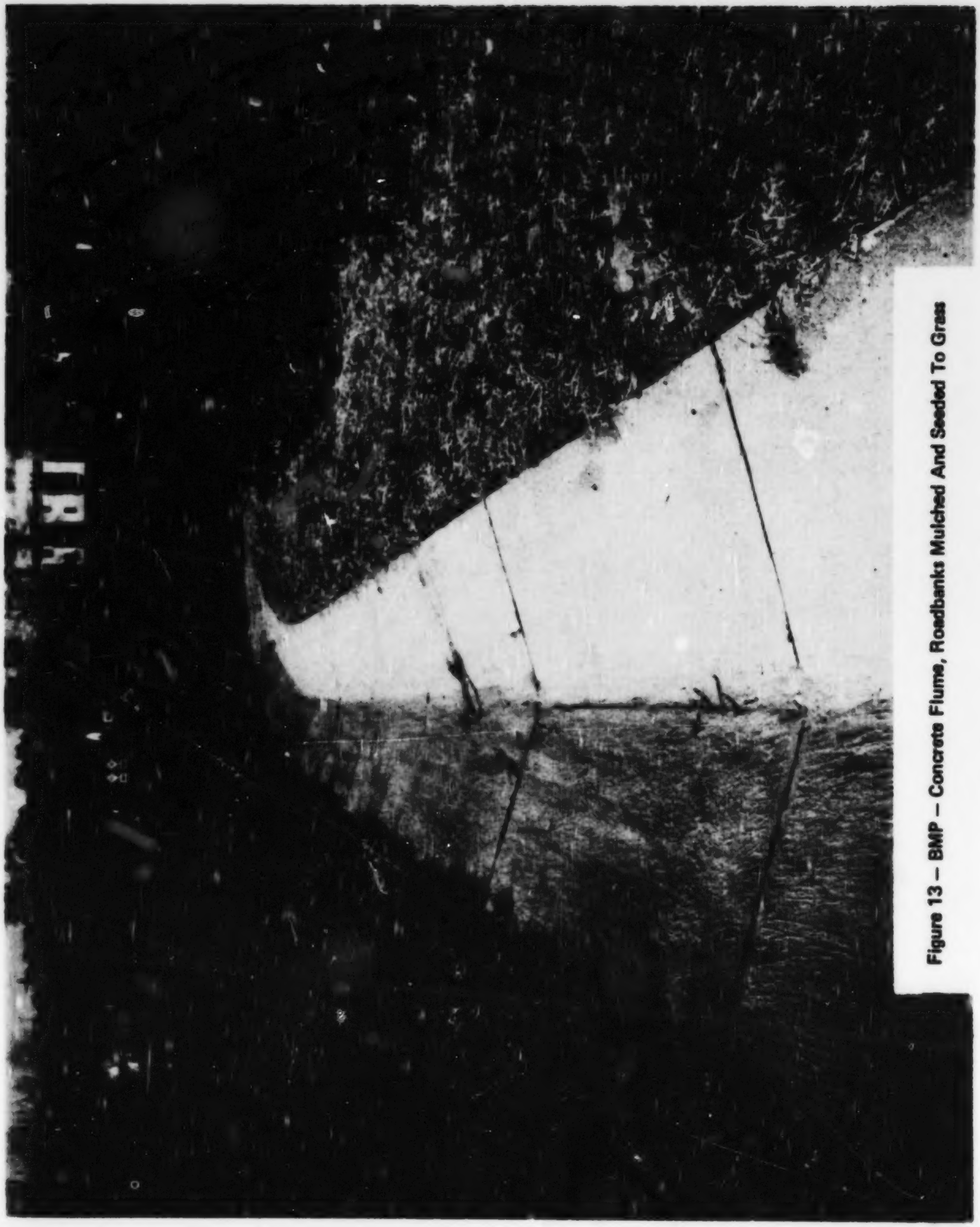

Figure 13 — BMP — Concrete Flume, Roadbanks Mulched And Seeded To Grass

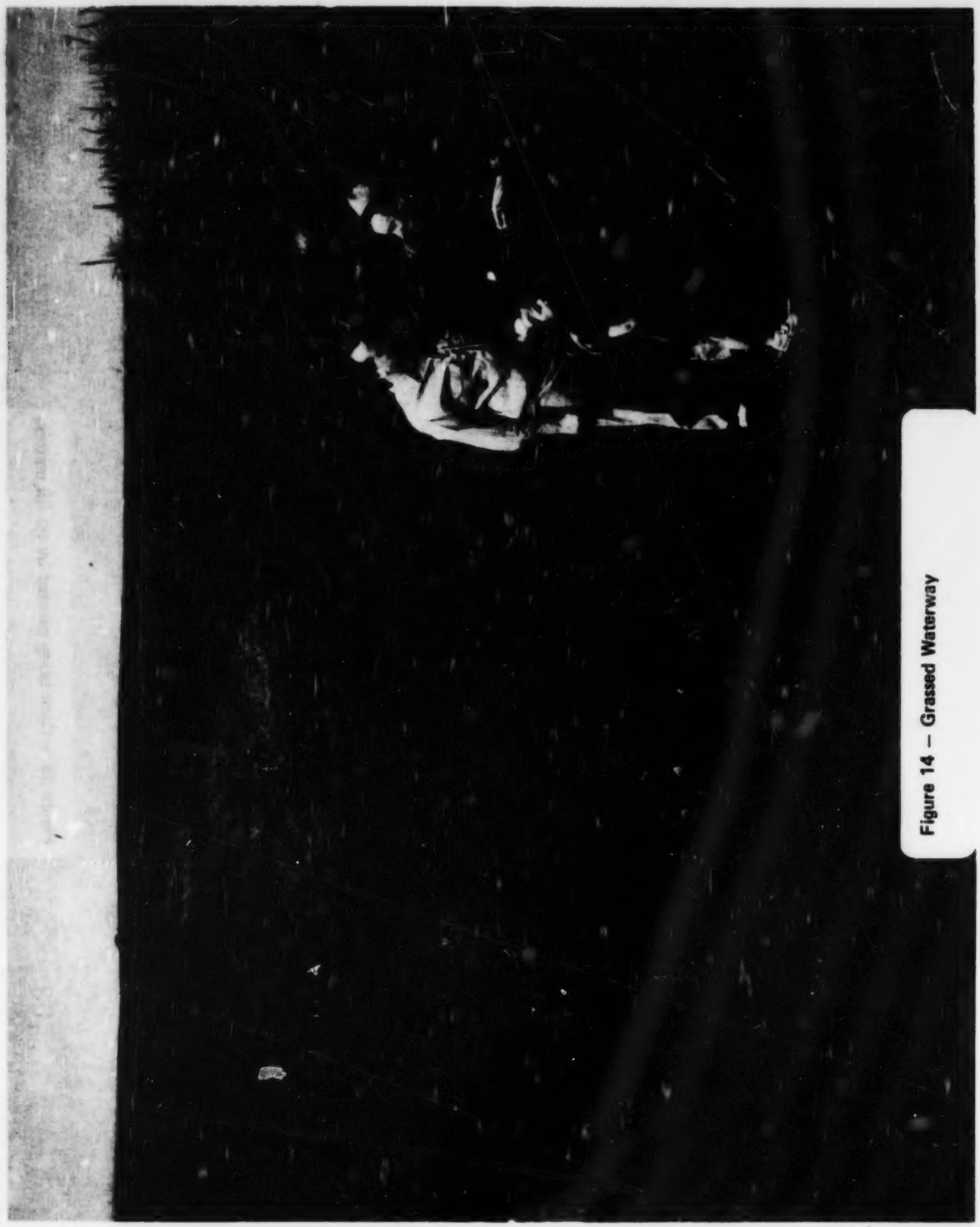

Figure 14 — Grassed Waterway

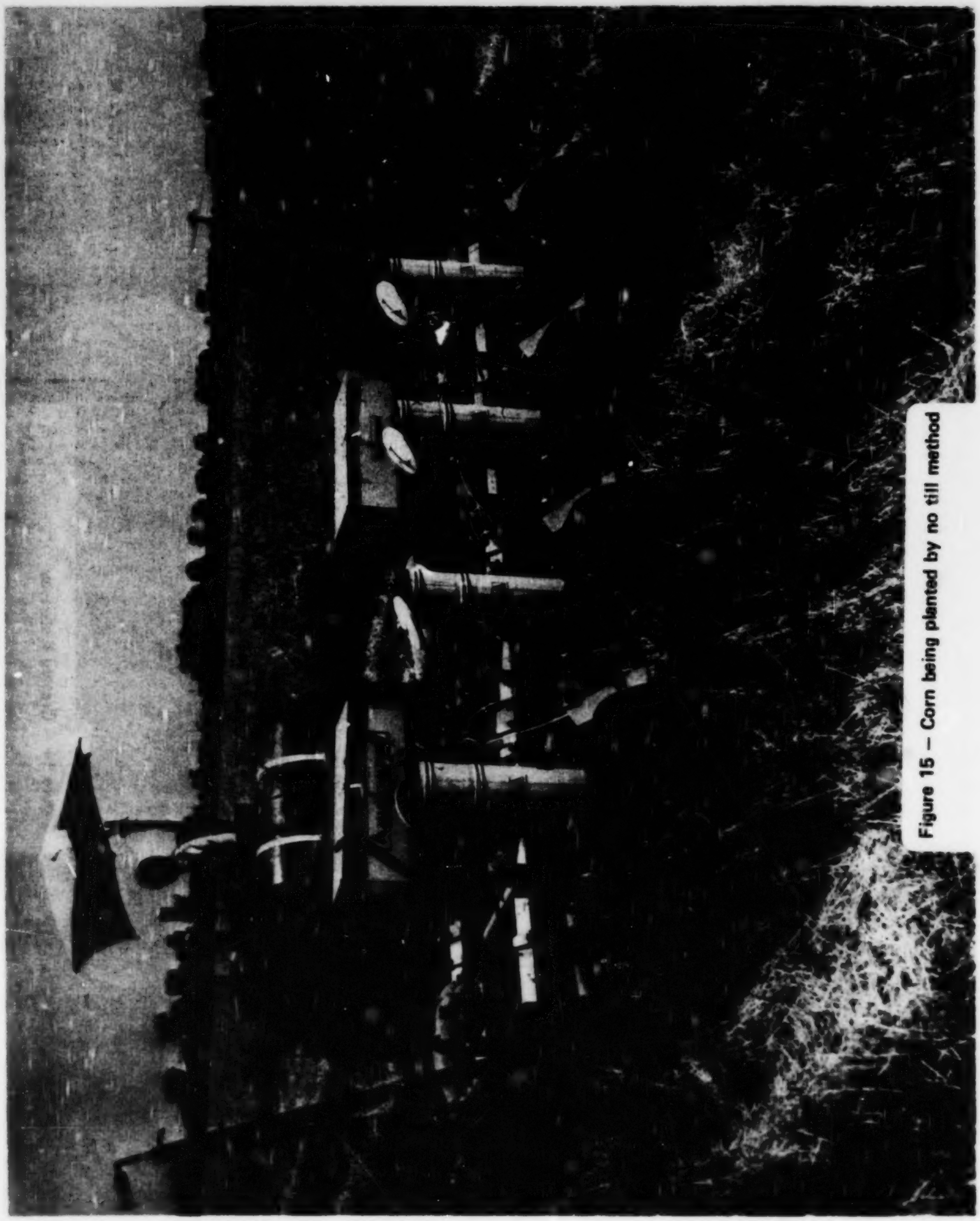

Figure 15 – Corn being planted by no till method

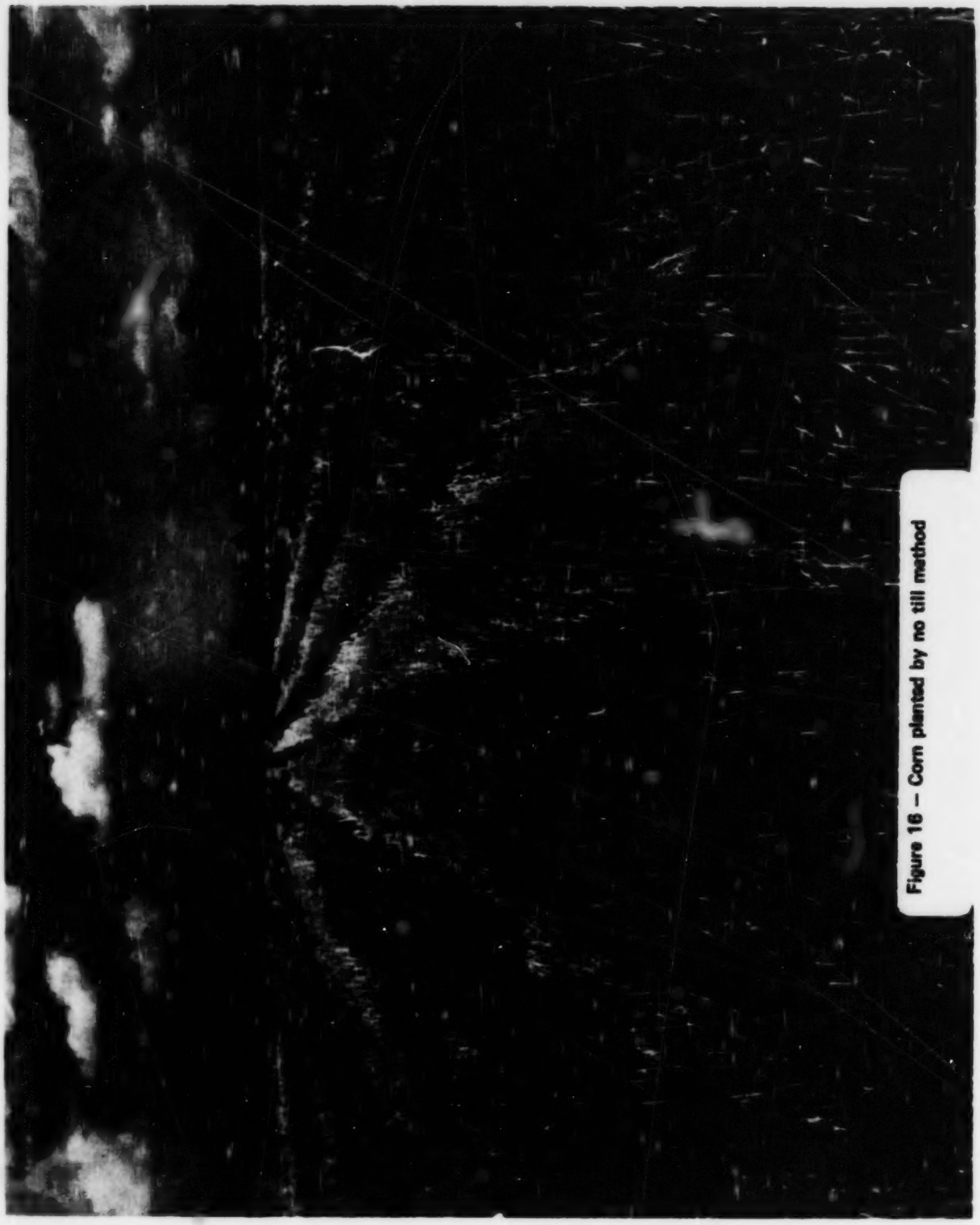

Figure 16 — Corn planted by no till method

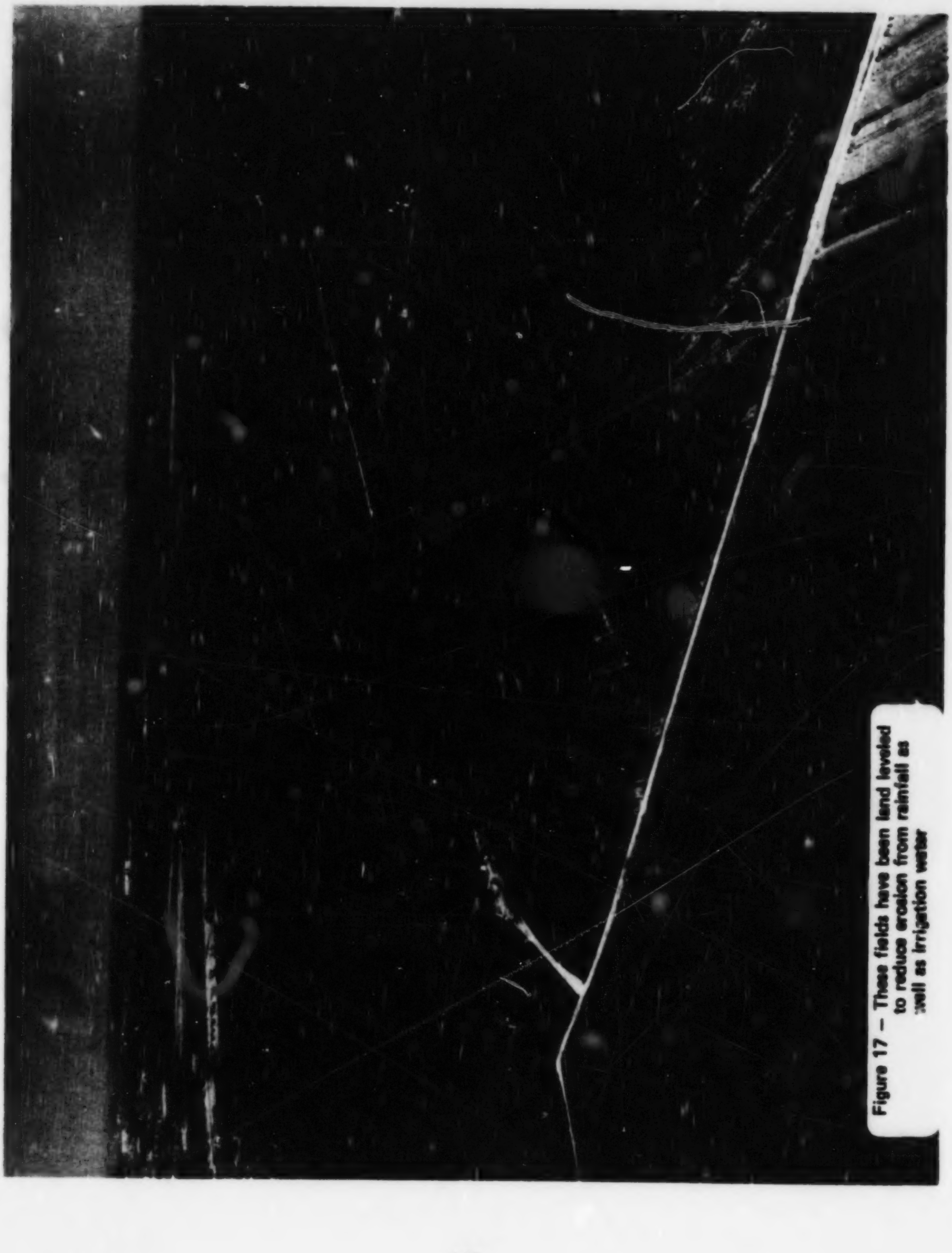

Figure 17 – These fields have been land leveled to reduce erosion from rainfall as well as irrigation water

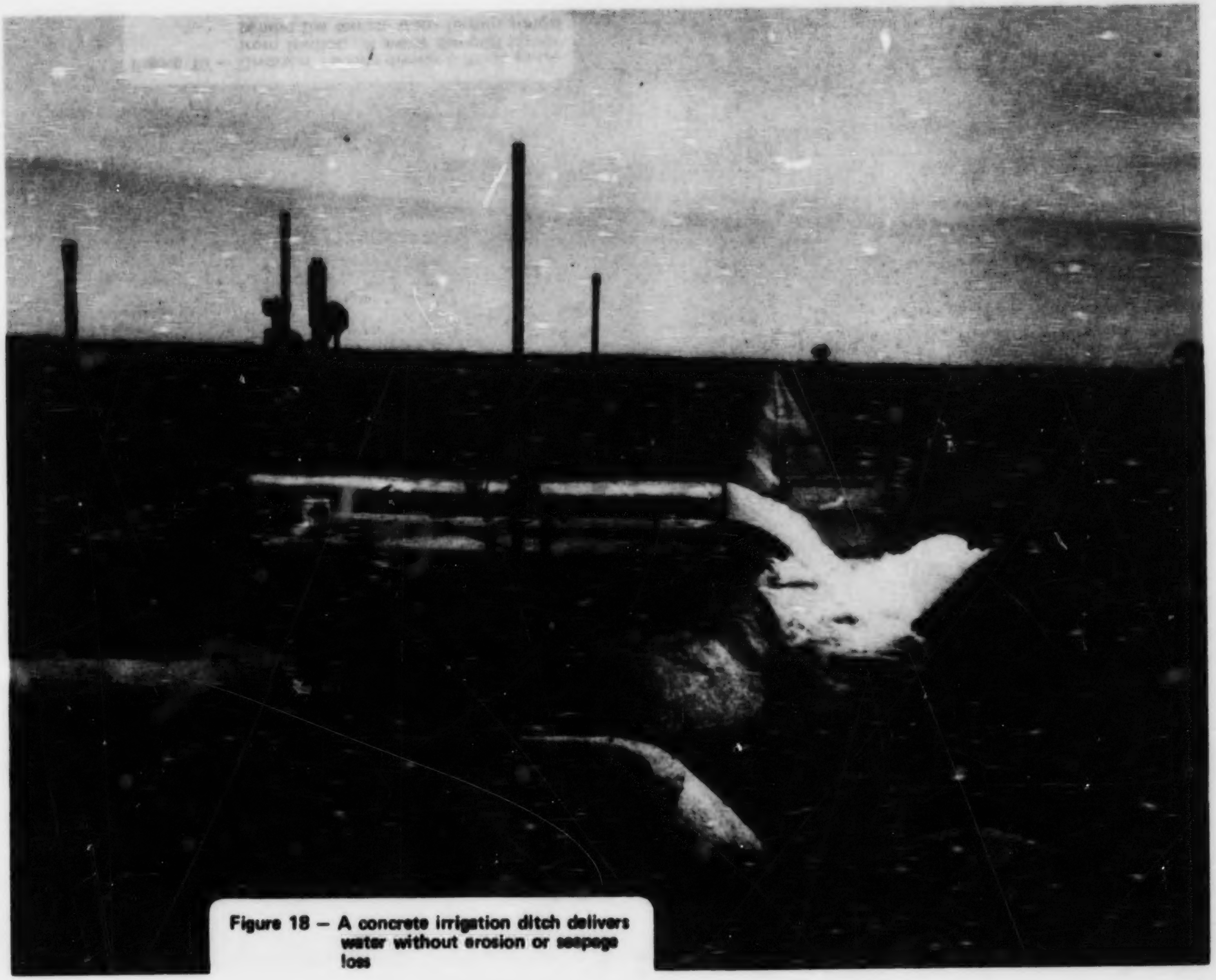

Figure 18 — A concrete irrigation ditch delivers water without erosion or seepage loss

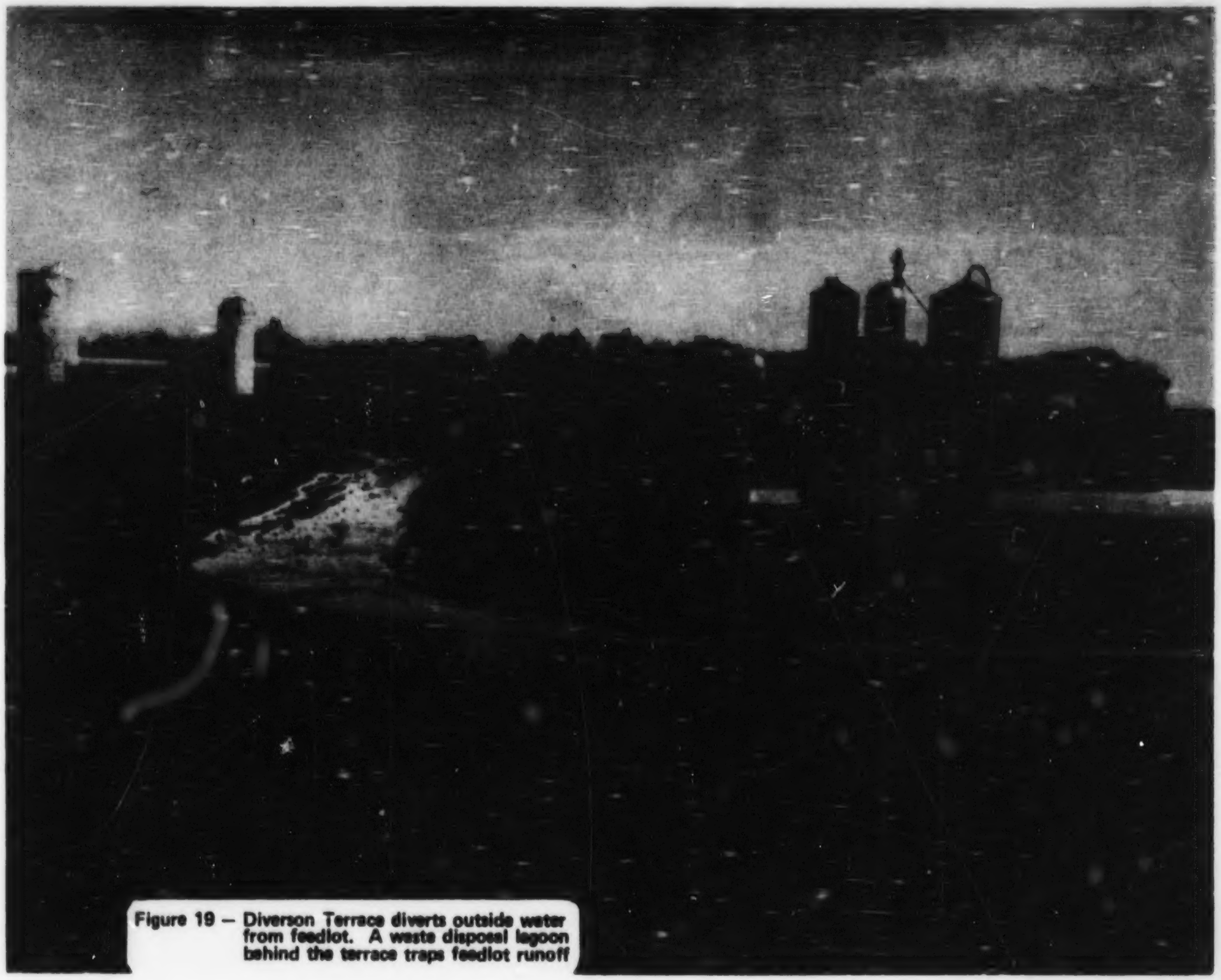

Figure 19 — Diverson Terrace diverts outside water from feedlot. A waste disposal lagoon behind the terrace traps feedlot runoff

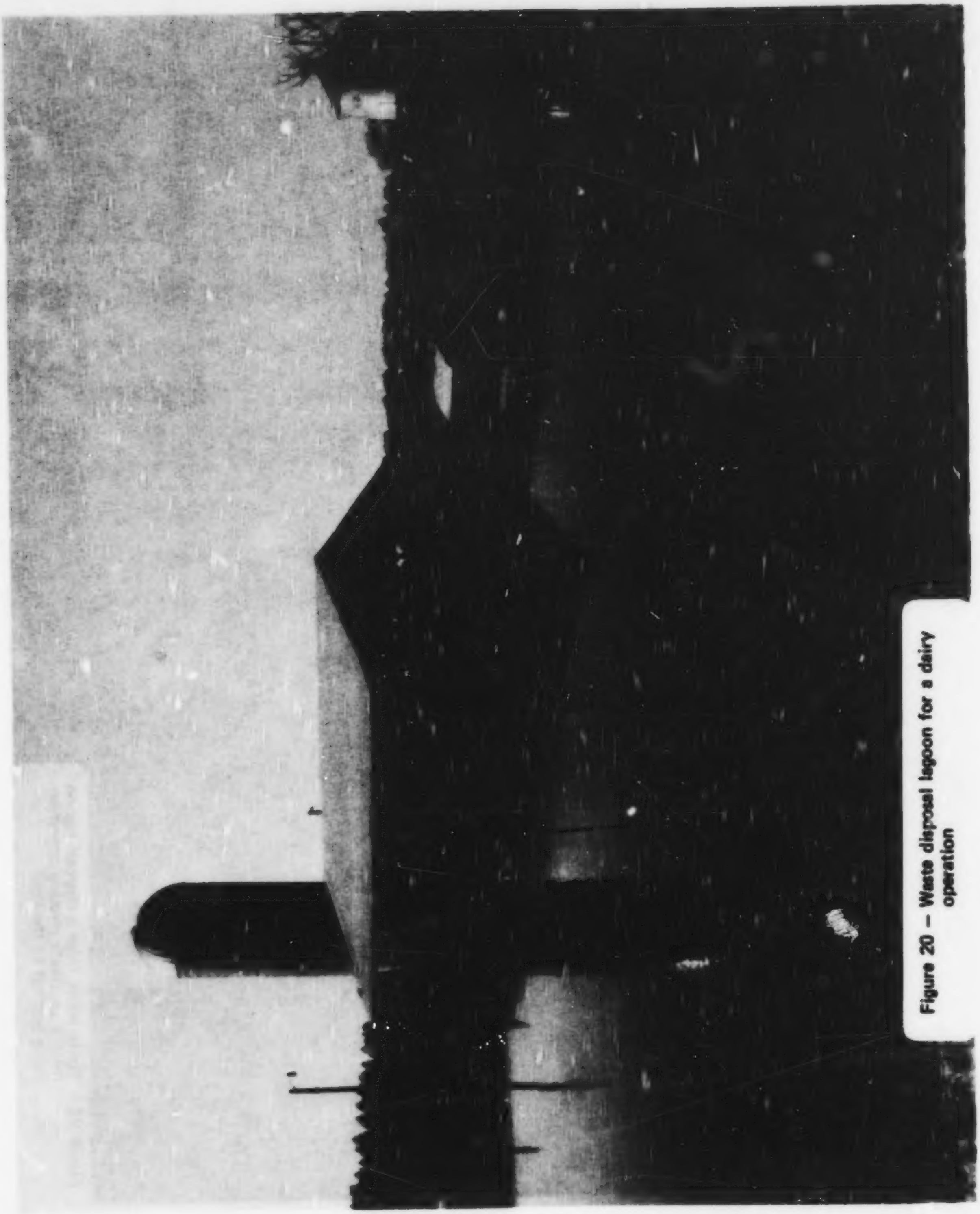

Figure 20 — Waste disposal lagoon for a dairy operation

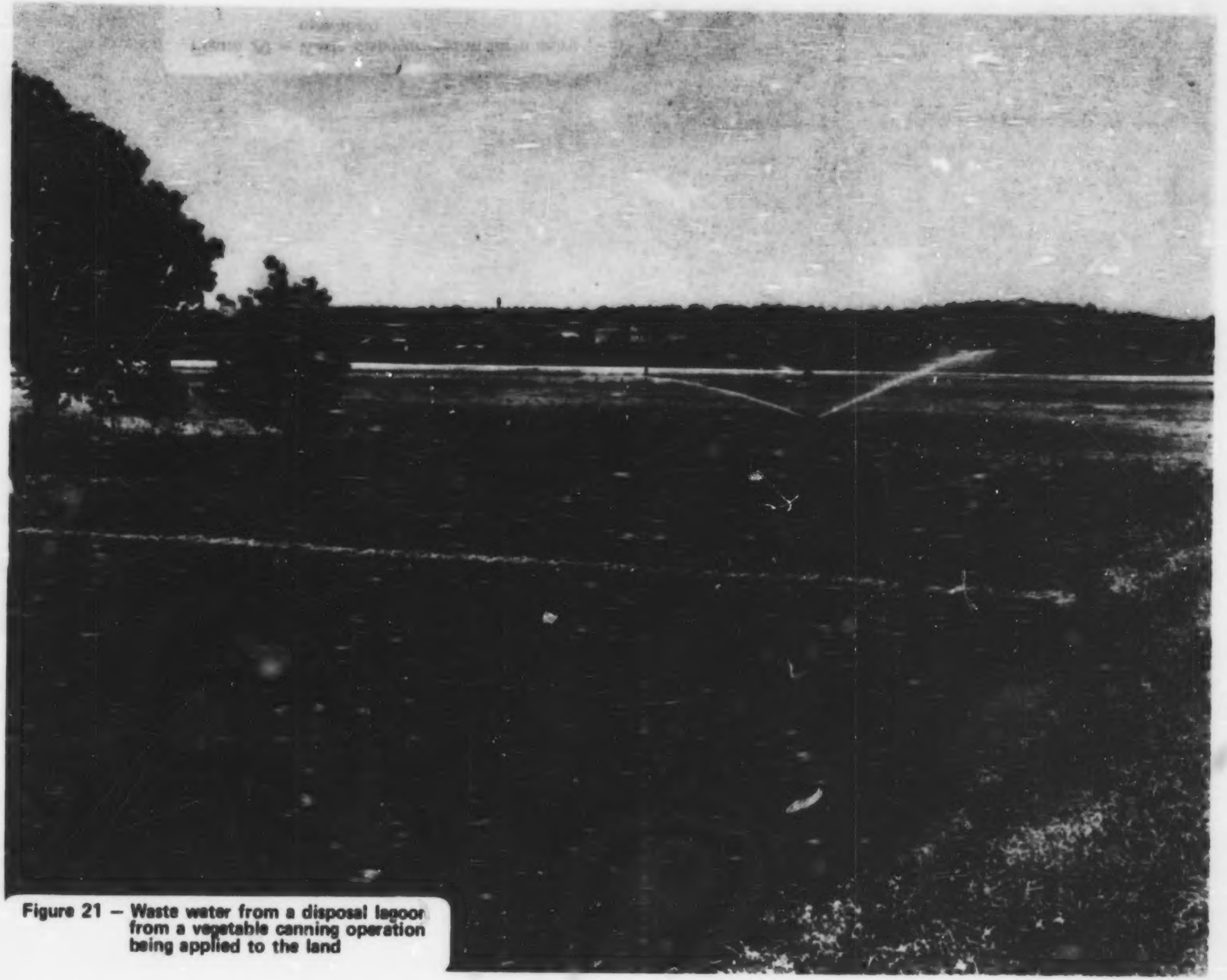

Figure 21 — Waste water from a disposal lagoon from a vegetable canning operation being applied to the land

Figure 22 – Farm Pond with wildlife food and cover.

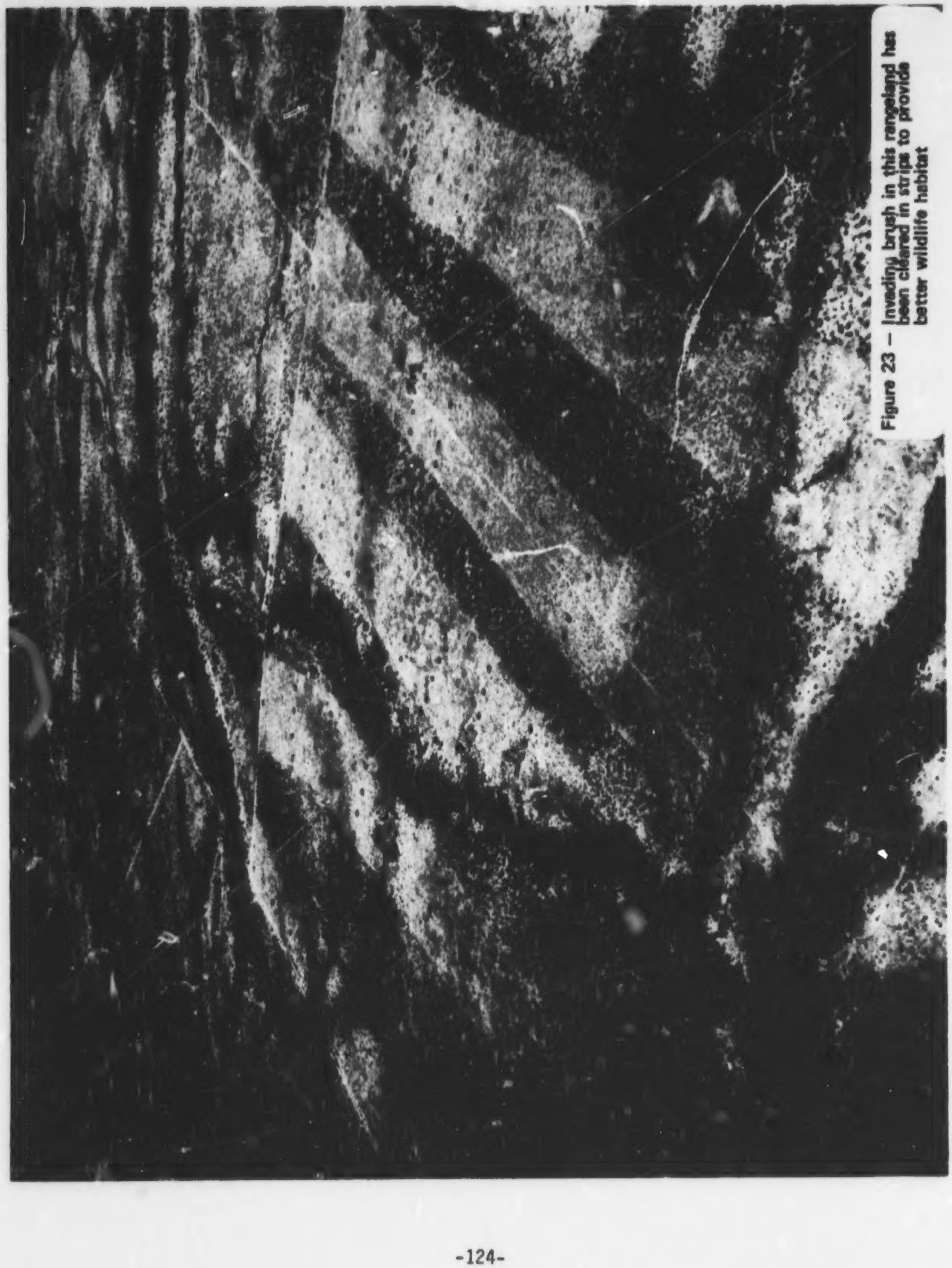

Figure 23 — Invading brush in this rangeland has been cleared in strips to provide better wildlife habitat

Figure 24 — Providing Spring Development or other watering areas will help keep cattle from the creeks

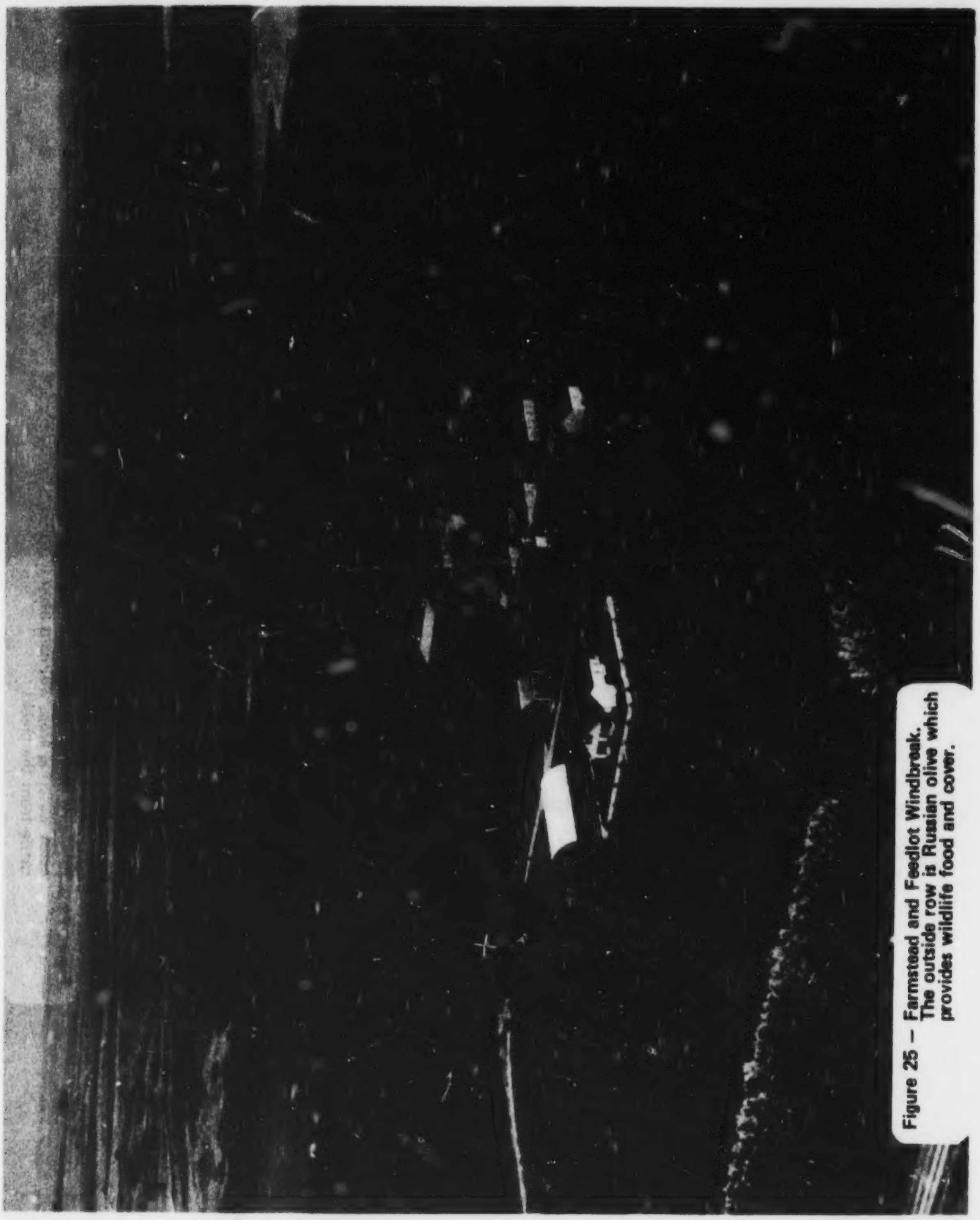

Figure 25 – Farmstead and Feedlot Windbreak. The outside row is Russian olive which provides wildlife food and cover.

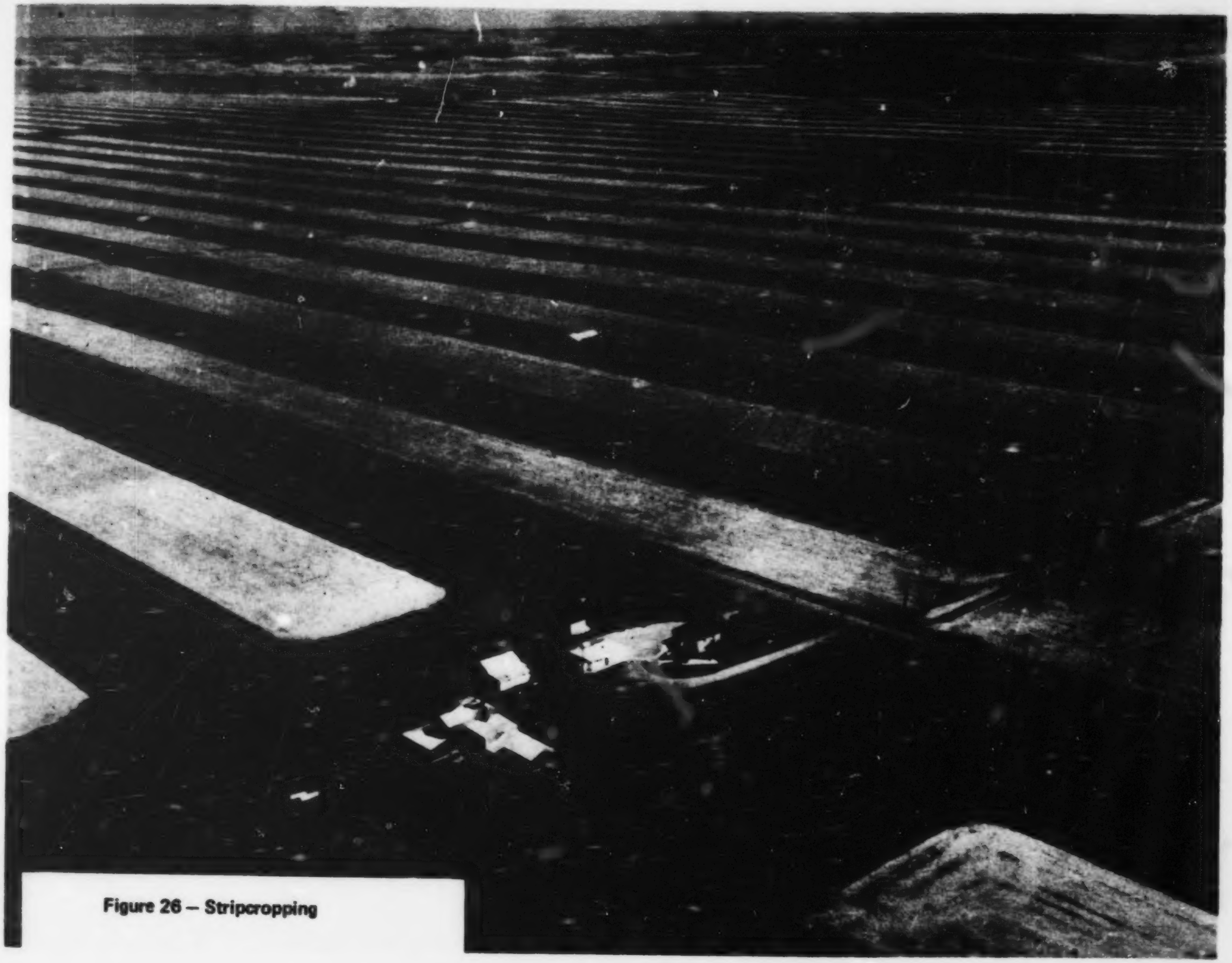

Figure 26 — Stripcropping

Figure 27 — Orchard Planted On The Contour

Figure 28 -- Grassed Borders Help Filter Pollutants

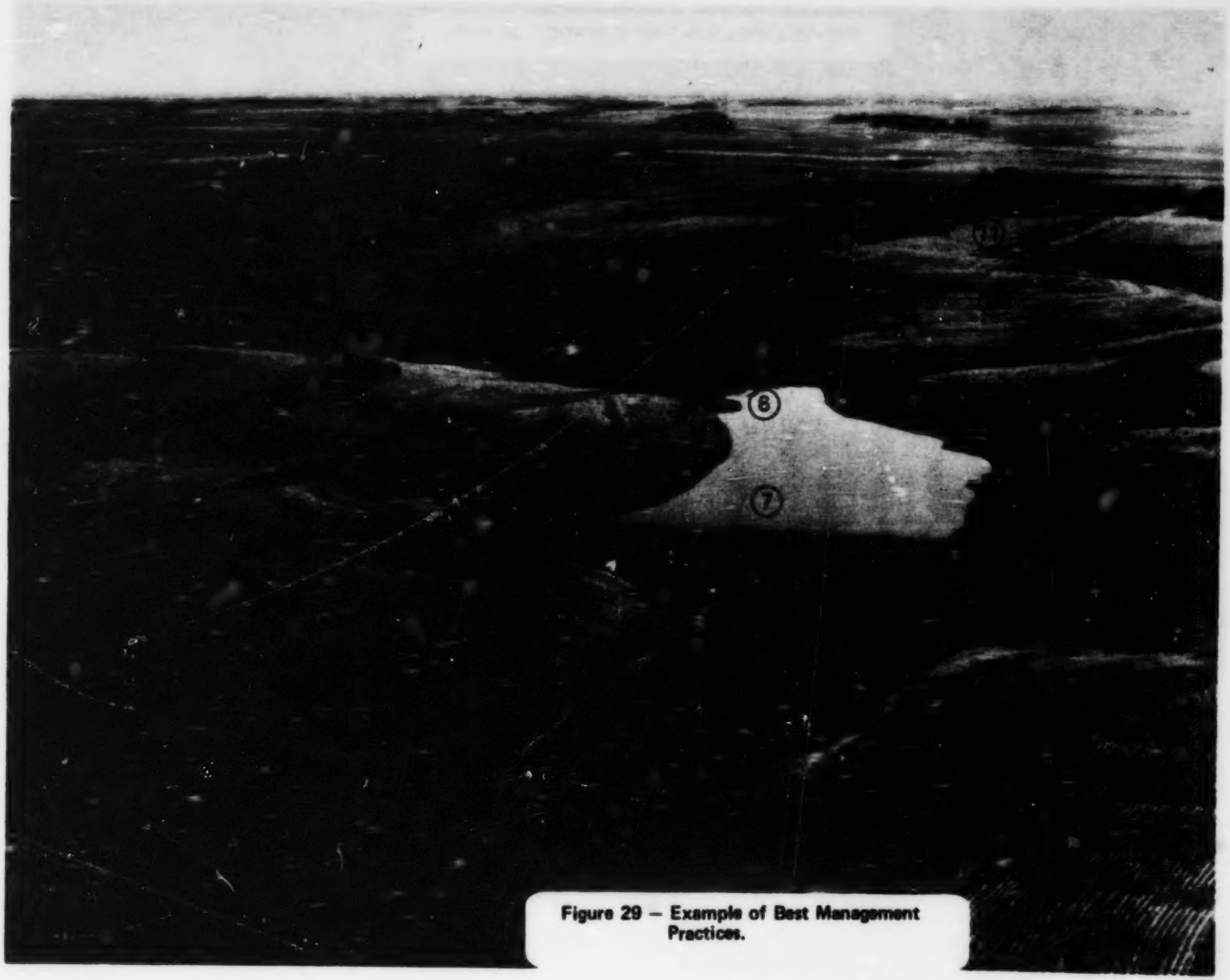

Figure 29 – Example of Best Management Practices.

LEGEND

BEST MANAGEMENT PRACTICES

FIGURE 29

1. CONTOUR FARMING
2. CONSERVATION CROPPING SYSTEM
3. CRITICAL AREA PLANTING
4. CROP RESIDUE USE
5. DIVERSION TERRACE
6. FISH POND MANAGEMENT
7. FLOODWATER RETARDING STRUCTURE
8. GRASSED WATERWAY
9. GRASSES & LEGUMES IN ROTATION
10. PASTURE & HAYLAND PLANTING
11. PASTURE & HAYLAND MANAGEMENT
12. CONTOUR STRIP CROPPING
13. TERRACES
14. TREE PLANTING
15. WILDLIFE HABATAT DEVELOPMENT

The farmers who own the land in this picture are cooperators with their local Soil and Water Conservation District. (SWCD) Each has developed and is carrying out a conservation plan for his farm. The plan list the best management practices to be followed.

The SWCD has an agreement with the U.S. Department of Agriculture to furnish technical assistance to cooperating landusers. Standards and specifications and technical help to plan and apply each practice was furnished by the Soil Conservation Service. Cost share assistance for 6 of the 15 practices (No's: 3,5,7,8,10, & 13) was available through the Agricultural Conservation Program (ACP) administered by the Agricultural Stabilization and Conservation Service; soil testing assistance and information about such things as best crop varieties and insect and disease control methods from the Agricultural Extention Service; soil and water conservation loans from the Farmers Home Administration.

CHAPTER TWELVE

RESIDUAL WASTE CONTROL NEEDS; LAND DISPOSAL NEEDS

40 CFR Part 131.11

(k) *Residual waste control needs; land disposal needs.* (1) An identification of the necessary controls to be established over the disposal of residual wastes which could affect water quality and a description of the proposed actions necessary to achieve such controls.

(2) An identification of the necessary controls to be established over the disposal of pollutants on land or in subsurface excavations to protect ground and surface water quality and a description of the proposed actions necessary to achieve such controls.

(Note: Residual waste control needs need not be determined by designated areawide planning agencies where the Governor has determined pursuant to Section 208 (b)(4) of the Act that the State will develop residual waste control requirements pursuant to Section 208 (b) (2) (J) and (K) on a Statewide basis.

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INTRODUCTION

Element (k) deals with the control necessary to abate pollution that might stem from the disposition of residual wastes. An Environmental Protection Agency study lists the following major categories of residual wastes: wastewater sludge, septage residuals, water treatment residuals, municipal refuse, combustion and air pollution control residuals, industrial wastes, feedlot residuals, mining wastes, and dredge spoil residuals.

DISTRICT INVOLVEMENT

Conservation district programs encompass the residual waste categories of feedlot residuals and municipal sludge (land disposal) and to a lesser extent, mining wastes, dredge spoil residuals, and some agriculture related industrial wastes. Districts can offer a relatively full range of inventorying, planning, and application assistance (see Chapter One for details) on those management practices involving land reclamation, land spreading, and diversion and drainage of surface runoff. Soil suitability and interpretive information can be provided for the location of sanitary landfills and erosion and sediment control measures can be prescribed for the sites. Districts can also make inputs relative to the quantity and quality of wastes that can be utilized on the land--the capacities of soils and crops to assimilate waste components and limits for cadmium, zinc, lead, nickel, and other toxic substances.

In addition, districts are in a position to provide information and judgments concerning the social, economic, and environmental impacts of the disposal locations as well as their potential impacts on prime farmlands.

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CHAPTER THIRTEEN

URBAN AND INDUSTRIAL STORMWATER SYSTEMS NEEDS

40 CFR Part 131.11

(1) *Urban and industrial stromwater systems needs*. (1) An identification of the required improvements to existing urban and industrial stormwater systems, including conbined sewer overflows, that are necessary to attain and maintain applicable water quality standards.

(2) An identification of the needed urban and industrial stormwater systems for areas not presently served over at least of 20-year planning period (in 5-year increments) that are necessary to attain and maintain applicable water quality standards, emphasizing appropiate land management and other nonstructural techniques for control of urban and industrial stormwater runoff.

(3) A cost estimate for the needs identified in (1) and (2) above, the reduction in capital construction costs brought about by nonstructural control measures, and any capital and annual operating costs of such facilities and practices.

INTRODUCTION

Element (1) is concerned with the control and treatment of stormwater discharges and combined sewage overflows from urban and industrial areas. Generally, the problems are related to combined sewers, infiltrated sanitary sewers, storm sewers, unsewered runoff, hydrologic modifications, and erosion. The various control alternatives include such items as land management (land use planning, upstream impoundments, erosion and sediment control,etc.); collection systems controls (sewer separation, runoff inlets and catch basins, improved regulators and tide gates, etc.); treatment (physical/chemical/biological); integrated systems (storage, treatment, re-use, etc.); and sludge disposal (treatment or land disposal).

DISTRICT INVOLVEMENT

Increasingly, conservation district programs have encompassed work in urban areas, particularly in the field of erosion and sediment control. In many districts arrangements have been perfected with municipal authorities to require, as a part of a permit for land disturbing activities, the development of erosion and sediment control plans meeting the approval of the district and conforming to district technical standards and specifications. In other municipal areas, soil survey and other interpretive and evaluation information is made available for land use planning resource.

District experiences and technical materials relating to the construction of upstream impoundments might be of benefit. In addition, assistance on land disposal of sludge could be given by providing soils data on the suitability of sites and by prescribing erosion and sediment control features for the disposal areas.

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CHAPTER FOURTEEN

TARGET ABATEMENT DATES

40 CFR Part 131.11

> (m) *Target abatement dates*. Target abatement dates or schedules of compliance for all significant dischargers, nonpoint source control measures, residual and land disposal controls, and stormwater system needs, including major interim and final completion dates, and requirements that are necessary to assure an adequate tracking of progress toward conpliance.

INTRODUCTION

Element (m) focuses on target dates or schedules of compliance for the various sources of point and non-point pollution.

DISTRICT INVOLVEMENT

Conservation districts can help estimate non-point source pollution control dates, particularly for sediment, organic (animal wastes), and mineral salt (irrigation) pollutants. A discussion of some of the considerations associated with this estimate and ways districts could assist is contained in Chapter Eleven.

Districts could also aid in achieving earlier target abatement dates by modifying their long range and annual programs to give higher priority to water quality management objectives and by encouraging other agencies and organizations to do the same.

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CHAPTER FIFTEEN

REGULATORY PROGRAMS

40 CFR Part 131.11:

(n) *Regulatory programs.* (1) A description of existing state/local regulatory programs which are being or will be utilized to implement the State water quality management plan. The description shall include the regulatory approach to be employed, the statutory basis for the program, and relevant administrative and financial program aspects.

(2) A description of necessary additional State/local regulatory programs to be established in order to implement the State water quality management plan. The description shall include the proposed regulatory approach, the necessary legislation, and anticipated administrative and financial capabilities.

(3) The regulatory programs described in § 131.11 (n) (1) and (2) should generally take full advantage of existing legislative authorities and administrative capabilities. However, such programs shall assure that:

(i) To the extent practicable, waste treatment management including point and nonpoint source management shall be on a Statewide and/or an areawide basis and provide for the control or abatement of all sources of pollution including inplace or accumulated deposits of pollutants;

(ii) The location, modification and construction of any facilities, activities, or substantive changes in use of the lands within the approved planning area, which might result in any new or deleterious discharge directly or indirectly into navigable waters are regulated; and

(iii) Any industrial or commercial wastes discharged into any publicly owned treatment works meet applicable pretreatment requirements.

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INTRODUCTION

The state control program will address both point and non-point pollution sources. Since conservation districts are primarily concerned with the latter, the following discussion is oriented toward non-point source controls.

The effectiveness of a voluntary versus a regulatory approach to some aspects of non-point source pollution control has generated considerable discussion and is a matter that will undoubtedly occupy the attention of water quality planners throughout the program formulation process.

Issuances from the Environmental Protection Agency, reflecting the elements specified in Section 208 (b)(2)(C) of P.L. 92-500, have tended to highlight the regulatory aspects of control programs.

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As stated earlier, conservation districts prefer that first priority be given to programs of education, technical assistance, and cost sharing in controlling most sources of non-point pollution.

While conservation districts have championed this voluntary approach, they were also among the first to recognize that regulatory controls may be needed in some cases. In fact, more than half of the state district enabling laws enacted in the 1930's and 1940's included authority for districts to issue erosion control regulations. These authorities have seldom been used, but recently, several states have evidenced an interest in utilizing these authorities for meeting new demands for erosion and sediment control.

In the 1960's, conservation districts began to participate in the development of regulatory programs to control erosion on sites where new houses, factories, roads, shopping centers, and other construction was taking place. Maryland's districts were the pioneers, and a Maryland state law gives districts responsibility for approving conservation plans for erosion control on construction sites. Later, district officials in other states came to believe it necessary to provide some measure of regulation governing all land disturbing activities, including those associated with agriculture. Iowa became the first state to establish such a requirement. At this time, 14 states and the Virgin Islands have enacted laws providing for one or another kind of regulatory erosion and sediment control program (see Tables 15-1 and 15-2). In each case, conservation districts play a significant role in the program.

Table 15-1

STATE EROSION AND SEDIMENT CONTROL LEGISLATION

GEORGIA	Erosion and Sedimentation Act of 1975 Ga. Code Ann. Secs. 5-23-1a--5-2313a (1975 Rev., 1975 Cum. Pocket Part)
HAWAII	Soil Erosion and Sediment Control Hawaii Rev. Stats., Ch. 180-C (1968, 1975 Rev. Supp.)
IOWA	Soil Conservation Districts Law I.C.A. Secs. 467A.1-467A.53 (1971, 1976 Cum. Pocket Part)
MARYLAND	Sediment Control Act Ann. Code Md., Nat. Res., Secs. 8-1101--8-1108 (1975 Cum. Pocket Part)
MICHIGAN	Soil Erosion and Sedimentation Control Act Mich. Stats. Ann. Secs. 13-1820(1)-13.1820(17) (1975 Rev. Vol. 9, Cum. Supp.)
MONTANA	The Natural Streambed and Land Preservation Act of 1975* R.C.M. Secs. 26-1510--26.1523 (1947, 1975 Cum. Pocket Supp.)
NEW JERSEY	Soil Erosion and Sediment Control Act N.J. Stats. Ann. Secs.4-24-39-4-24-55
NEW YORK	Soil and Water Conservation Law McKinneys Cons. Laws of N.Y., Book 52-B
NORTH CAROLINA	Sedimentation Pollution Control Act of 1973 Gen.Stats. N.C. Secs. 113A-50--113A-66 (1975, 1975 Supp.)
OHIO	Soil and Water Conservation District Law Page's Ohio Rev. Code Ann. Secs. 1515.01--1515.30; 1501.20 (1964, 1975 Supp.)
PENNSYLVANIA	The Clean Streams Law of Pennsylvania* 35 Pa. Stats. Secs. 691.1 et.seq. (1964, 1975-76 Supp.)
SOUTH CAROLINA	County Sediment Control Programs Code of Laws of S.C., 63.195.101--63.195.106 (1962, 1975 Cum. Supp.)
SOUTH DAKOTA	Act to Regulate Land-Disturbing Activities Within the State Resulting in Soil Erosion and Sediment Damage S.D. Senate Bill 65 of 1976
VIRGINIA	Erosion and Sediment Control Act Code of Va. Tit. 21, Ch. 1, Secs. 21-89.1--21.89.15 (1975 Cum. Supp.)
VIRGIN ISLANDS	Environmental Protection, Shore and Erosion Control V.I. Code Tit. 12, Ch. 13

*Law includes authority for erosion and sediment control among other activities.

Table 15-2

SUMMARY OF PRINCIPAL PROVISIONS OF STATE LAWS PROVIDING FOR EROSION AND SEDIMENT CONTROL

(A reference to the particular law will be essential for complete explanation of provisions.)

PROVISIONS	Georgia	Hawaii	Iowa	Maryland	Michigan	Montana	New Jersey	New York	North Carolina	Ohio	Pennsylvania[1]	South Carolina	South Dakota	Virginia	Virgin Islands
TYPE OF STATE LAW															
Erosion and sediment control	x	x		x	x		x		x			x	x	x	x
Conservation districts			x					x		x				x	
Water quality and stream control						x									
METHODS OF CONTROL															
Approved erosion and sediment control plan required for land disturbance	x			x	x	x	x	x	x		x2	x	26	x	x
Establishment of soil loss limits			x										x		
Permits on basis of an approved plan	x			x			23				x	x	27	x	x
RESOURCES COVERED															
Natural resources	14	17		x			14								
Land	x	x		x			x	25					x	x	x
Soil			x		x				x	x		x			
Water	x	x	x	x	x	x	x		x	x	x	x	x	x	x
Streams and streambanks						x			x		x				
EXEMPTIONS FROM LAW															
Agriculture and horticulture	x		3	x	19				x		4	x		5	x
Mining	x				x				x			x		x	
Homes or small sites	x	x		6			x					x		x	
Highways or railways	x		7											x	
Minor land disturbances	x	x									4	24		x	
STATE CONTROL AGENCY															
Participating agencies:															
Soil and Water Conservation	x		x				x	x		x			x	x	x
Natural Resources	x		x	x	x	x				x					
Other	15	18			20	8	21		29	13	9				28
State responsibilities:															
Develop policies			x								x				
Develop criteria.standards.guidelines	16	x		x	x	x	x		x	x	x		x	x	
Adopt rules and regulations	x				x				x		x				
Review and approve local programs or plans			x	x	x		x		x	x	x		x	x	x
Perform enforcement functions[10]	x			x					x		x		x		x
Assist local agencies with:															
Ordinances, regulations, and programs			x	x			x		x						
Enforcement				x	x										x
Cost sharing			x				22			x					
Approve state and federal agency plans				x										x	
Adopt program where local agency fails to do so	x	x								x				x	

Note: An "x" indicates that the respective law contains the provision listed. Numbers refer to footnotes.

PROVISIONS	Georgia	Hawaii	Iowa	Maryland	Michigan	Montana	New Jersey	New York	North Carolina	Ohio	Pennsylvania	South Carolina	South Dakota	Virginia	Virgin Islands
LOCAL CONTROL PROGRAM															
Participating local agencies:															
Conservation districts	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Counties	x	x		x	x	x	x		x		x	x	x	x	
Cities	x			x	x				x		x		x	x	
Towns or townships				x		x		x		x					
CONSERVATION DISTRICT RESPONSIBILITIES															
Review and approve erosion and sediment control plans	x			x	x	x	x	x	x		x	x	26	x	x
Establish soil loss limits			x				x								
Assist county or other local agency develop ordinances or regulations		x		x	x										
Adopt standards, criteria, guidelines				x		x							x	x	
Adopt rules and regulations			x			x									x
Perform enforcement functions[10]			x	x	x	12	x				x	x	x	12	x
COUNTY,CITY,TOWN, OR TOWNSHIP RESPONSIBILITIES															
Adopt programs									x		x	x	x	x	
Review and approve plans				11	x				x		x				
Adopt ordinances	x	x		x	x				x						
Issue permits on basis of an approved plan	x			x			23				x			x	
Perform enforcement functions[10]	x			x	x		x		x		x	x	x	x	
Issue rules and regulations				x					x			x			

1-Authorities contained in laws and regulations
2-Acceptable plan required at site of activity
3-Erosion control practices may not be required on lands used for such pruposes only
4-Exempted from permit requirements only
5-Except as to grading, excavating, or filling
6-Except in Calvert County
7-Within city limits
8-Department of Fish and Game
9-Department of Environmental Resources
10-May include permits, inspection, complaints, violation procedures, fines, other legal actions
11-In municipalities not within a district
12-Special provisions for emergency actions
13-Environmental Protection Agency
14-Air and other resources
15-Division of Environmental Protection of the Dept. of Natural Resources
16-Established by law
17-And other resources
18-Department of Health
19-Persons engaged in agricultural practices who have agreement with a soil conservation district, will not be subject to any site plans, land use plans, or permits required under the law, but will be subject to enforcement procedures after July 1, 1979.
20-Department of Agriculture
21-Secretary of Agriculture and Commissioner of Environmental Protection
22-May assist with grants
23-Certification
24-Emergency repairs
25-Agricultural land as described in the law
26-Required where district determines that an agricultural land-disturbing activity is violating adopted standards
27-Permit issuing authorities must require compliance with district standards
28-Department of Public Works
29-North Carolina Sediment Control Commission

NON-POINT SOURCE PROGRAM STRUCTURE

INTRODUCTION

The type of non-point source pollution control program(s) adopted by a state will be influenced by a host of factors, including the type of pollutants and nature of the problems, ownership and population charactersitics, soils, topography, land use, and many other things. The program may address a particular category of activity, such as agriculture and silviculture; a particular pollutant, such as sediment; or particular geographical areas which are determined to be sensitive or criitcal.

The National Inventory of Soil and Water Conservation Needs (USDA) revelas some interesting facts concerning the nation's land ownership, use, and conservation treatment needs--facts that are broadly indicative of the probable nature and scope of non-point source problems and controls.

Among other things, the Inventory shows that:

--One-third of the land is federal public land, administered by various agencies of the federal government.

--Two-thirds of the land is owned in individual parcels by private citizens; business and industry; and states, counties, cities, and other units of government.

--Erosion is the dominant problem on about half of the land; excess water on nearly a fifth; and shallowness, stoniness, subjectivity to drought, or salinity on about a quarter.

--Locally controlled rural land is about equally divided among the three major productive uses: cropland, 30 percent; pasture and range, 34 percent; and forest, 32 percent.

--Judged against current standards, additional conservation treatment is needed on 64 percent of cropland, 67 percent of pasture and rangeland, 62 percent of forest land, and 28 percent of other land.

The Section 208 planning process now underway will result in the identification of non-point sources of pollution. The control applied deemed to be most effective will then be selected. While there are a large variety of programs which may be applicable, a number of general concepts should be followed when developing a voluntary or regulatory program.

There is perhaps no single "best" program structure for dealing with all aspects of non-point source pollution. Those states having viable sediment control programs may find that a relatively simple accommodation to include other pollutant sources such as animal wastes and salts may be adequate. Other states need to broaden the entire scope of their programs or may need to initiate new programs.

VOLUNTARY PROGRAM

In the event that a states finds that a voluntary program will control non-point sources of pollution, conservation districts suggest that the program for sediment, organic (animal waste), and mineral salt (irrigation) pollutants be structured along the following lines:

1. Assign leadership for the effort to the state soil conservation agency at the state level and to the conservation districts at the local level.
2. Develop a strong education and information program through the state Extension Service, enlisting the aid of all interested agencies, groups, and organizations and focusing on the designated non-point source problem areas.
3. Provide the necessary technical and cost sharing assistance commensurate with the need to meet target abatement dates.
4. Provide for a monitoring program designed to track progress and to evaluate program effectiveness on a periodic basis.

REGULATORY PROGRAM

Framework Structure

In the event that a state finds that a regulatory non-point source pollution control program is required to meet water quality management objectives, certain state/conservation district experiences might be helpful.

A review of existing and proposed legislation indicates that in most instances, non-point source control programs for sediment pollutants involve a joint effort by a state agency(ies) and local jurisdictions and local conservation districts. While there are variations in approach and in institutional arrangements, there is a relatively high degree of commonality. An attempt has been made to capture the major components into a framework program structure. The framework which follws is intended as a conceptual guide.

1. Enact a state law (or issue regulations) which (1) provides for basic standards or guidelines for designated problem areas and (2) authorizes and directs the development of sediment control programs--including procedures, ordinances, and enforcement provisions--by the appropriate state agency(ies) together with (a) counties and municipalities in cooperation with conservation districts, or (b) conservation districts. Other non-point source categories such as organic pollutants (animal wastes) and mineral salt pollutants (irrigation) could be included in such programs as appropriate.

2. Assign responsibility to the state soil conservation agency to prepare model ordinances/regulations, to assist counties and municipalities in developing local programs, and to approve such programs.

3. Include as major elements of ordinances/regulations:

   a. For each stream segment deemed to be a problem because of pollutants, define (delineate) the watershed area(s), the surrounding land areas contributing to the problem.

   b. Require land users within the designated watershed area(s) to develop a conservation plan to be approved by the applicable conservation district and meeting the conservation district technical standards and specifications (best management practices). Small holdings such as individual residences and others could be exempted as desired.

   c. Require land users to maintain their conservation plan for review by representatives of the state soil conservation agency, county or municipality, or conservation district as appropriate. So long as land user in good faith proceeds (or has proceeded) to carry out his conservation plan, he would be deemed to be in compliance.

   d. Provide to land users the technical and cost sharing assistance commensurate with the need to meet target abatement dates.

   e. Concentrate enforcement on dealing with the most critical problems.

4. In support of the program, appropriate arrangements should be made for:

   a. Funding (1) the administrative costs for the state agency(ies) and the local jurisdictions and local conservation districts; (2) the technical assistance costs of the conservation district cooperating agencies; and (3) the special incentives program.

   b. A vigorous information and education effort.

Program Variations

Numerous variations in program structure exist under current legislation--variations in the roles and responsibilities of state agencies as well as in associated county, municipal, and conservation district activities.

The National Association of Conservation Districts, as a part of its Sediment Control and Manpower Project (SCAMP) effort conducted under an Environmental Protection Agency contract, has reviewed in detail state erosion and sediment control laws in Maryland, Virginia, Iowa, Montana, Pennsylvania, and Ohio. Administrative and institutional arrangements, scope of program, and manpower requirements were included in the review and reports were issued in a series of SCAMP Information Circulars.

The six state reports have now been published in a single document, Erosion and Sediment Control Programs: Six Case Studies, available at $5.00 per copy from the National Association of Conservation Districts, P.O. Box 855, League City, Tex. 77573. Those water quality planners and state agencies engaged in considering a non-point source pollution control program will find this book valuable. It contains among other things legislative analyses, functional analyses, manpower requirements, institutional arrangements, and procedural guides.

As a means of highlighting the program variations, charts taken from the six state studies appear at the end of this chapter.

In addition to different administrative arrangements among state agencies, there could also be considerable variation in the local jurisdiction/local conservation district interrelationships. Several alternative conservation district involvements are presented in Table 15-1, pg. 155.

Program Standards and Control Mechanisms

State water pollution control agencies are authorized to establish water quality standards. In some cases these agencies may set such standards at higher levels than required by national guidelines as a means of achieving antidegradation policies.

Regulatory control mechanisms are those methods which may be applied to control a pollution source in line with water quality standards. In the non-point source arena, the major forms of regulatory controls are those involving land use (e.g., zoning, easements, development regulations, sediment control ordinances, etc.); permits and/or licenses (e.g., for activities generating non-point source pollution); and fiscal policies (e.g., taxation policy to induce sound land use).

A review of the state sediment control programs developed thus far indicates that two approaches have surfaced: (1) a program in which an erosion and sediment control plan approved by the conservation district is required for land disturbing activities, with any required permits to be based on such a plan; and (2) a program based on the establishment of soil loss limits which may not be exceeded without penalty.

The type of control to be exercised is a matter of choice. However, conservation districts believe that a conservation plan requirement should be a major component of any regulatory control mechanism since it tends to maximize both on-site and off-site benefits. Generally, the permit/conservation plan approach appears to be particularly well suited to urban-suburban situations and to larger earth disturbances. For the bulk of the agricultural sector, a conservation plan together with technical and cost sharing aid may prove to be the most feasible.

It should be recognized that, for many situations, regulatory authority may be necessary.

Non-Point Source Program Considerations

In considering control programs for non-point source pollutants, several factors need to be taken into account which could affect the type and/or timing of a program effort. For example, sediment control would not only achieve reduction in sediment pollution, but would also achieve reductions in other pollutants.

Agricultural production, which includes sediment, salt (irrigation and animal production), organic, nutrient, pesticide, and pathogen (animal production) pollutants, serves to illustrate this point.

Nitrogen and phosphorus are the two fertilizer nutrients of most concern. Fertilizer usage is generally self-curbing because of both economic and agronomic factors. Usually, the most serious source of phosphorus pollution is that associated with soil erosion, thus a program for sediment control would tend to reduce this source of pollution.

Pesticides are subject to a considerable range of federal and state regulations, use, and applicator licensing. Some pesticides are insoluble in water but may attach to soil particles and thus reach waters with the eroding soil. A sediment control program could help reduce this source of pollution, also.

Pathogens from animal production are a potential source of concern and require a number of corrective measures such as dikes and diversions to reduce pollution. Attention to such items as sediment control and proper site selection and land spreading would also help.

Since erosion and sediment control can be expected to achieve reductions in other pollutants, consideration might well be given to developing a non-point source control program aimed at sediments, organics (animal wastes), and salts (irrigation) which would not only afford a direct control effort for these pollutants, but would also represent a control approach for nutrients, pesticides, and pathogens as well. For the latter three, a supplemental information and education program could be undertaken to emphasize the necessity of (a) applying fertilizers in accordance with soil tests, at recommended rates, and with proper cultural practices; (b) using pesticides with care; and (c) controlling animal wastes to reduce the dangers of pathogens.

The effects of such a program would presumably be reflected in monitoring work. Should the program not achieve necessary reductions for nutrients, pesticides, and pathogens, additional control would be required.

Chart 15-1

Maryland Sediment Control Program

Roles of State, Local, and Federal Agencies

X Primary responsibility
V Supporting Role
* Sources Covered

	STATE AGENCIES					LOCAL AGENCIES					FEDERAL			
Program Activities	Dept. of Natural Resources Water Resources	Dept. of Natural Resources Forestry	Dept. of Natural Resources Bureau of Mines	Dept. of Agriculture, State Soil Conservation Committee		Conservation District	County	Municipality	Washington Suburban Sanitary Commission		Soil Conservation Service	Extension Service		
Rules and Regulations	X			V										
Local Ordinances							X	X						
Administration	X		X	V		X								
Technical Guides	X	X		V		X					X			
Technical Assistance	X	X		V		X					X			
Information and Education	X	X		V		X					V	V		
Training	X	X		V		X					V	V		
Plan Review	X					X								
Plan Approval	X						X	X						
Permits	C						X	X						
Inspection	X						X	X						
Sources of Sediment														
Agriculture				*		*					*	*		
Silviculture	*	*		*		*					*			
State Land	*			*		*					*			
Federal Projects	*			*		*					*			
Urban Areas	*			*		*	*	*			*			
Surface Mining (sand & gravel)			*	*		*	*				*			
Public Utilities	*			*		*			*		*			
Strip Mining (coal)			*								*			

Chart 15-2

Virginia Sediment Control Program

Roles of State, Local, and Federal Agencies

X Primary responsibility

V Supporting role

* Sources covered

	STATE			LOCAL					FEDERAL					
Program Activities	Soil and Water Conservation Committee	State Attorney General		Conservation Districts	Municipalities	Extension Service	Court		State Soil Conservation Service					
Standards, guidelines	X			X	X	V			X					
Approve Local Programs	X													
Approve Plans-State Agencies	X													
Technical Assistance	X			X	X				X					
Information and Education	X			X		V			V					
Training	X			X	X	V			V					
Review, Approve Local Plans				X	X				V					
Permits					X									
Inspection	X				X									
Legal Action		X			X		X							
Types of Disturbance Covered														
Urban Construction	*	*		*	*	*	*		*					
Shore Erosion	*			*					*					
Storm Water Management	*			*	*	*			*					

Chart 15-3

Iowa Sediment Control Program

Roles of State, Local, and Federal Agencies

X Primary Responsibility
V Supporting Role
* Sources Covered

	STATE						LOCAL			FEDERAL				
Program Activities	Iowa Natural Resources Council	Department of Soil Conservation	Department of Environmental Quality	Iowa State University and Extension Service	Attorney General		Conservation Districts	Extension Service		Soil Conservation Service	Agricultural Stabilization & Conservation Service			
Develop Statewide Water Plan	X	V												
Administration		X					X							
Rules and Regulations		X	V	V			X			V				
Technical Guides		X		V			X			X				
Information and Education		X		V			X	V		V				
Technical Assistance		X					X			X				
Cost Sharing		X					X				X			
Complaints		V					X							
Inspection							X			V				
Enforcement					X		V							
Sources Covered														
Agriculture		*		*	*		*			*				
Urban		*			*		*			*				
Forest Lands		*			*		*			*				
Surface Mining (sep. law)		*					*			*				

Chart 15-4

Montana Sediment Control Program

Roles of State, Local, and Federal Agencies

X Primary Responsibility
V Supporting Role
* Areas Covered

	STATE							LOCAL			FEDERAL			
Program Activities	Board of Natural Resources	State Conservation Districts	Department of Natural Resources	Department of Fish and Game	Department of Health	Department of State Lands	District Courts	Conservation Districts		Private	Soil Conservation Service	Forest Service	Bureau of Land Management	Corps of Engineers
Minimum standards	X	V	V	V							V			
Administration			V	V	V			X						
Public Information and Education			V					X			V			
Technical Standards				V				X			X			
Project Approval (S.310)								X						
Inspection (TEAM)				X				X		X				
Legal Action							X							
Permits (404, Sec. 10, WQ Nav. Str.				X	X	X						V	V	X
Technical Assistance								X			X			
Areas Covered														
Streambeds and banks	X	X	X	X	X	X	X	X		V	X	X	X	X
Federal land											X	X		
					X									

* Applies to proposed projects for channel changes; new diversions; rip rap; jetties; new dams and reservoirs; commercial, industrial, and residential development; dredging and dragging operations; dykes and levees; debris basins; grade stabilization structures; bridges and culverts; recreation facilities and certain farming and grazing practices.

Chart 15-5

Pennsylvania Sediment Control Program

Roles of State, Local, and Federal Agencies

X Primary Responsibility
V Supporting Role
*** Sources Covered**

	STATE							LOCAL				FEDERAL		
Program Activities	Environmental Quality Board	Bureau of Soil and Water Conservation	Bureau of Water Quality Management	Bureau of Litigation & Enforcement	Bureau of Forestry	Bureau of Surface Mine Reclamation		Conservation Districts	County Governments	Cities, Townships, Borough	Townships	Soil Conservation Service		
Rules and Regulations	X													
Administration of Program		V	X	X		X		XV	XV	XV	XV			
Technical Standards		X	X		V	V		V				V		
Technical Assistance		X	V		V	V		X				V		
Training		X	X		V	V		XV				V		
Public Information		X	X		V	V		XV				V		
Plan Review		X	X			X		XV				V		
Permits			X			X			V	V	V			
Inspection and Compliance		X	X			X		XV	V	V	V			
Enforcement			X	X		X		XV	V	V	V			
Surveillance & Monitoring		X	X			X		X				V		
Sources Covered														
Agriculture	*	*	*	*				*	*			*		
Silviculture harvest practices	*	*	*	*	*			*	*			*		
Surface Mining	*			*		*								
Road Construction	*	*	*	*				*	*	*	*	*		
Urban Construction	*	*	*	*				*	*	*	*	*		

Chart 15-6

Ohio Sediment Control Program

Roles of State, Local, and Federal Agencies

X Primary Responsibility
S Supporting Role
V Voluntary Option
* Sources Covered

	STATE						LOCAL					FEDERAL		
Program Activities	Ohio Environmental Protection Agency	Ohio Soil and Water Conservation Commission		Ohio Division of Soil and Water Districts	Ohio State University Extension Service		Soil and Water Conservation Districts	County Extension Service	Counties	Municipalities		Soil Conservation Service	Agricultural Stabilization & Conservation Service	
Establish Air & Water Standards	X													
Rules and Regulations		S		X					V	V				
Coordinate Agriculture & Urban Program		S		X			X							
Agreements for funding & Implementation				X			X							
Name Advisory Boards				X										
Program Implementation				X			X		V	V				
Soil Loss Limits	S	S		X			S		V	V		S		
Inspection				X			X		V	V				
Cost Sharing				X			X						X	
Information and Education				S	X		X	X	V	V		V		
Technical Standards	X			X	S		X	S	V	V		X		
Sources Covered														
Agricultural Sediment	*	*		*	*		*	*				*		
Animal Waste	*	*		*	*		*	*				*		
Urban Sediment	*	*		*	*		*	*	*	*		*		

Table 15-1

ALTERNATIVE LEVELS OF RESPONSIBILITY

(Listed in colums of increasing district involvement, going from Column "A" in which a district has no responsibility to Column "F" where there is maximum district responsibility.)

A	B	C	D	E	F
County adopts* program and ordinance	Same as "A" with district serving in advisory capacity for the county's program and district reviews and comments on conservation plans	County adopts program and ordinance	County adopts program and ordinance	District adopts program	District adopts program
County approves conservation plans		District approves conservation plans	District approves conservation plans	District approves conservation plans	District approves conservation plans
County issues building, grading, and other permits		County issues building, grading, and other permits	County issues building, grading, and other permits	County issues building, grading, and other permits	County issues building, grading, and other permits
County inspects and serves notice to comply and takes legal action against violators		District may inspect, monitor, or make reports	County inspects, monitors, and enforces on plan requiring a permit	County inspects, monitors, and enforces on plans requiring a permit	District inspects, monitors, and enforces on all conservation plans (requires a joint resoltuion of county and district)
		County serves notice to comply, takes legal action against violators	District inspects, monitors, and servides notice to comply and County takes legal action against violators where permits are not required	District inspects, monitors, serves notice to comply, takes legal action against violators where permits are not required	

*Where "county" is used, "city" and "incorporated town" is also appropriate.

(Alternatives A,B,C, and D provide for adoption of the program by July 1, 1975, except for those local jurisdictions not within a district. In such cases as in alternatives E and F, the program would need to be adopted within 18 months after adoption of the State program or by January 1, 1976.)

Source: Erosion and Sediment Control Programs: Six Case Studies. National Association of Conservation Districts (Virginia report).

CHAPTER SIXTEEN

MANAGEMENT AGENCIES

40 CFR Part 131.11

(o) *Management agencies.* (1) The identification of those agencies recommended for designation by the Governor pursuant to § 130.15 of this Chapter to carry out each of the provisions of the water quality management plan. The identification shall include those agencies necessary to construct, operate and maintain all treatment works identified in the plan and those agencies necessary to implement the regulatory programs described in § 131.11 (n).

(2) Depending upon an agency's assigned responsibilities under the plan, the agency must have adequate authority and capability:

(i) To carry out its assigned portions of an approved State water quality management plan(s)(including the plans developed for areawide planning areas designated pursuant to Section 208 (a) (2), (3), or (4) of the Act) developed under this part;

(ii) To effectively manage waste treatment works and related point and non-point source facilites and practices serving such area in conformance with the approved plan;

(iii) Directly or by contract,to design and construct new works, and to operate and maintain new and existing works as required by any approved water quality management plan developed under this part;

(iv) To accept and utilize grants or other funds from any source for waste treatment management or nonpoint source control purposes;

(v) To raise revenues, including the assessment of user charges;

(vi) To incur short and long term indebtedness;

(vii) To assure, in implementation of an approved water quality management plan, that each participating community pays its proportionate share of related costs;

(viii) To refuse to receive any wastes from a municipality or subdivision thereof, which does not comply with any provision of an approved water quality management plan applicable to such areas; and

(ix) To accept for treatment industrial wastes.

- -

INTRODUCTION

Element (o) deals with identification and designation of agencies which could manage and/or implement the various control programs for both point and non-point source pollution.

DISTRICT INVOLVEMENT

Conservation districts are uniquely qualified and equipped to plan, manage, and implement portions of the state and areawide water quality management programs, particularly those involving non-point source pollution control for sediment, organic (animal wastes), and mineral salt (irrigation) pollutants.

° They are legal entities of the state charged with the responsibility of carrying out soil and water conservation programs which include

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many non-point pollution source control aspects included in the 208 water quality management program arena;

- They have a direct relationship with a key state agency in the conservation field--the state soil conservation agency;

- They offer a highly decentralized and effective delivery system with some 40 years of experience in the field. There are nearly 3,000 conservation districts encompassing about 99 percent of the nation's farms and ranches, 97 percent of the farm and ranch lands, and an ever-growing amount of urban and suburban areas;

- They have entreé to land users. There are currently over 2.3 million district cooperators of which in excess of 1.8 million have been assisted in developing voluntary conservation plans, representing about 45 percent of the nation's total operating units;

- They have perfected working arrangements with cooperating agencies bringing to bear a wide range of technical expertise in developing technical standards and specifications and in helping land users with inventory and evaluation information and with on-site planning and practice application;

- They are locally controlled and directed by governing officials broadly representative of the district; and

- They represent a classic federal-state-local partnership arrangement that works and enjoys widespread support.

Potential institutional arrangements for utilizing conservation districts as implementing agencies are discussed elsewhere in this document, principally in Chapter Fifteen.

CHAPTER SEVENTEEN

ENVIRONMENTAL, SOCIAL, ECONOMIC IMPACT

40 CFR Part 131.11

> (p) *Environmental, social, economic impact.* An assessment of the environmental, social, and economic impact of carrying out the plan.

- -

ENVIRONMENTAL IMPACT

The variety of conservation district resource information described in Chapter One would be useful in assessing the environmental impact of the water quality management plan. Virtually all of the river basin surveys and watershed and flood prevention projects have an environmental assessment and most of the project undertakings have a detailed environmental impact statement prepared. Since these projects, like the water quality management plan, focus on land and water management, they should provide a very useful source of information.

SOCIAL IMPACT

The local nature of conservation districts, with governing officials representing a cross-section of local citizens, offers an excellent sounding board regarding the social impacts and acceptability of the water quality management plan.

ECONOMIC IMPACT

Cost-return and other economic information available through the conservation districts is a source of aid in assessing the economic impact and practicality of the water quality management plan, particularly as it would apply to land users' abilities to comply with non-point source pollution controls. Many district officials are also landowners and could bring actual experiences and judgments to bear.

Chapter Eleven points out that in addition to an economic impact, some form of cost/benefit analysis should be undertaken.

CHAPTER EIGHTEEN

FRAMEWORK GUIDE

NON-POINT SOURCE POLLUTION CONTROL PROGRAM
(SECTION 208, P.L. 92-500)

FOR

- SEDIMENT POLLUTANTS
- ORGANIC WASTE POLLUTANTS
- MINERAL SALT POLLUTANTS

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FOREWORD

This material is a suggested framework guide for developing a non-point source pollution control program for those non-point source activiites generally included in conservation district programs--chiefly erosion and sediment control (sediment pollutants), agricultural waste management (organic waste pollutants), and irrigation water management (mineral salt pollutants). Other categories of pollutants could be included as appropriate. It suggests using task forces at both state and local level as a sound mechanism for involving the public in water planning and management.

This conceptual approach was derived from general experiences of planning agencies and conservation districts in some areas where 208 plan development is well advanced. Other planning agencies, both state and local may be too far along to consider it. However, a majority of state and local 208 agencies and conservation districts may wish to study this approach in developing their own plans.

A task force approach involving both state and local levels is proposed since non-point sources cover so many land uses and conditions and involve a variety of interests. This approach helps maximize the pooling of data, judgments and values, and creates a greater awareness of non-point source control needs. A state agency could undertake the task with cooperative efforts and consultations with interest groups.

The sequential list of work items outlined is not meant to be exhaustive. Numerous variations from the guide would, of course, be possible and additional details and studies will no doubt occur to users. Some of the activities could be undertaken concurrently. Of particular significance is the need to provide for appropriate public inputs and reviews.

In view of the probable deficiencies in data and the need for more research, monitoring, and evaluations, it is anticipated that non-point source pollution control programs may well need to be phased, with the first phase based largely on existing information and judgment and subsequent phases reflecting refinements of data and understandings. This guide is directed primarily toward the first phase aspects of program development.

Inherent in the proposal is the need for a state agency leadership assignment with staff support to guide and coordinate the various undertakings. The guide would be equally applicable to an area level study.

It was the clear intent of the Congress to involve the public in all phases of the program. Section 101 (e) of the Act states:

> "Public participation in the development, revision and enforcement of any regulation, standard, effluent limitation, plan, or program established by the Administrator or any State under this Act shall be provided for, encouraged, and assisted by the Administrator and the States. The Administrator, in cooperation with the States, shall develop and publish regulations specifying minimum guidelines for public participation in such processes"

Chapter 4, "Public Participation," of the Guidelines for State and Areawide Water Quality Management Program Development details citizen participation requirements as well as recommendations for optimum public involvement. Section 130.16 (c) and (d) discusses the requirement for State Policy Advisory Committees. In addition to the state level committee, citizen advisory committees should be established to provide valuable support throughout the planning process. Active participation by citizens should be sought.

BASIC PROGRAM APPROACH

For the most part, the procedures outlined in this guide related to a non-point source pollution control program structured generally along the lines described in Chapter Fifteen of this document. The programs involve (a) a voluntary approach and (b) a regulatory approach.

MAJOR ELEMENTS OF A VOLUNTARY PROGRAM

--Assign leadership for the effort to the state soil conservation agency at the state level and to conservation districts at the local level.

--Develop a strong information program focusing on designated program areas.

--Provide technical and cost sharing assistance to land users commensurate with the need to meet target abatement dates.

MAJOR ELEMENTS OF A REGULATORY PROGRAM

--A state law (or regulation) authorizing a state agency(ies) to develop pollution control programs with counties and municipalities in cooperation with conservation districts, or with conservation districts.

--A requirement that land users (in designated problem areas) develop a conservation plan to be approved by the applicable conservation district and meeting the conservation district technical standards and specifications (Best Management Practices). So long as the land user proceeded in good faith to carry out his plan, he would be deemed to be in compliance.

--Provide to land users, technical and cost sharing assistance commensurate with the need to meet target abatement dates.

--Concentrate enforcement on dealing with the most critical problems.

OVERVIEW OF SEQUENCE OF EVENTS

STATE LEVEL	40 CFR Part 131.11 Elements
1. Task Force Organization Leadership, membership, goals, schedules	
2. Data Inventory and Analysis Evaluation, data gaps, plans	(b), (d) (b)
3. Non-Point Source Problem Area Designations Segment classifications, basin/watershed delineations	(b)
4. Local Level Guidelines Procedures	
LOCAL LEVEL	
5. Task Force Organization Leadership, membership, goals, schedules	
6. Non-Point Source Problem Area Designation Review Recommended deletions/additions	(b),(d)
7. Non-Point Source Problem Identification Sources, kinds	(d)
8. Non-Point Source Control Needs Estimating amounts, best management practices, costs, impacts	(j), (o)
9. Report Narrative, tables, maps	(j), (o)
STATE LEVEL	
10. Review of Local Level Reports Adequacy, uniformity	
11. Compilation of Statewide Non-Point Source Control Needs Amounts, best management practices, costs	(j)
12. Non-Point Source Program Formulation Legislative review, costs, impacts, implementing agency(ies)	(j), (m), (n) (o), (p)
13. Recommended Non-Point Source Program State law/regulations, management/implementing agency(ies), institutional and financial arrangements	(m), (n), (o)
STATE/LOCAL LEVEL	
14. Non-Point Source Program Implementation State law/regulations, management/implementing agency(ies), model ordinances, information and education, institutional and financial arrangements, delivery	(m), (n), (o)

PROCEDURES

STATE LEVEL

1. Task Force Organization

Key Elements:

State Agency Leadership Assignment(s)
Membership
Objectives, Goals, Schedules
Sub-Task Force(s)
Staff Support
Financial Arrangements

Discussion:

State Agency Leadership Assignment(s). The initiative for organizing the task force should be taken by the state agency designated to develop the statewide 208 water quality management plan. In view of the relationship between the state soil conservation agency and conservation districts, strong consideration should be given to assigning leadership to this agency. As a minimum it is suggested that the state water quality management agency and the state soil conservation agency share the leadership role.

Membership. Members of the task force should be drawn from those federal and state agencies and other groups having interests, knowledge, or program activities in the non-point source areas being considered.

State agency representation, in addition to the state water quality management and state soil conservation agency, would involve those with activities in agriculture, fish and game, forestry, health, highways, mining/geology, and others, depending on the state organizational make-up.

Generally, the same type of representation should be sought from federal agencies. The U.S. Department of Agriculture has arranged for the creation of 208 Committees (or equivalent) usually consisting of the Agricultural Stabilization and Conservation Service, Economic Research Service, Forest Service, Soil Conservation Service, Farmers Home Administration, and Cooperative Extension Service. This would be an excellent contact point.

Representatives from other groups could be considered including designated 208 areas, river basin commission(s), the state association of conservation districts, and other public interest groups and institutions.

The task force should not be so large as to be unwieldy. A screening process for interest and participation may be in order or a steering committee arrangement could be utilized.

Objectives, Goals, Schedules. Effective management of the task force could be best achieved by adopting specific objectives, goals, and schedules--a work plan or other document reflecting who, what, where, and how. Periodic reviews would be in order to track progress.

Sub-Task Force. The appointment of sub-task forces may be needed to undertake specialized jobs. Some may of an an ad hoc nature while others might be needed for the entire program development period.

Staff Support. Either the state water quality management agency or the state soil conservation agency should provide suitable staff support to the task force. The need for day-to-day coordination and the development and tracking of work plans and schedules makes this virtually an essential ingredient to the success of the undertaking.

Financial Arrangments. Appropriate financial arrangements would need to be considered as a part of the work plan. Most agencies could be expected to make some contributions to the effort out of their own resources. However, special studies or other activities may well need to be financed from 208 sources. Agreements regarding work to be done and their associated time-frames need to be developed and funding arrangments made.

2. Data Inventory and Analysis

Key Elements:

Inventory
Analysis and Evaluation
Data Deficiencies and Plans for Remedying

Discussion:

Inventory. An early task would be the inventorying of data--resource information of all kinds and sources pertinent to the problem. Initially a list might be compiled derived from information supplied by members of the task force (see Chapter One for types of resource materials available through conservation districts.) The list would then need to be screened and the more relevant materials secured for analysis and evaluation.

Analysis and Evaluation. The various data would need to be analyzed and evaluated as to adequacy for broad planning purposes. Usually, general soils maps, topographic maps, land use maps and charts, and other information are available on a state and county basis. Availability of water quality information needs to be analyzed, particularly as it relates to non-point source problems.

Data Deficiencies and Plans for Remedying. Should data deficiencies surface, plans will need to be developed for remedying them. In view of the time constraints (November 1, 1978, submission of water quality management plan), data gathering at this time would likely be quite limited reflecting perhaps some water quality sampling and on-site investigations and surveys. Considerable reliance on existing knowledge and judgment will be required.

3. Problem Area Designations

Key Elements:

Segment Classifications
Basin/Watershed Delineations

Discussion:

Segment Classifications. Element (b)--Water Quality Assessment and and Segment Classifications (40 CFR Part 131.11)--requires an assessment of water quality problems and the classification of segments. Segments are to include the surrounding land areas that contribute to problems and upstream sources are to be considered when identifying boundaries of each segment. An assessment of present water quality may be available as reflected in the state's report required under Section 305 (b) of P.L. 92-500.

Basin/Watershed Delineations. From the information developed in item (1) above, delineate the basin/watershed boundaries (the surrounding land areas) that contribute to the water quality problem, i.e., the area from which the non-point source pollutants stem. The basin/watershed area so delineated is referred to herein as the "designated problem area."

The suggestion to designate problem areas (basin/watersheds) is advanced because it is not likely that all streams (waters) of a state are so adversely affected by non-point source pollution as to require remedial action at this time. In effect, this approach results in a prioritization effort. If, on the other hand, all of the streams are in fact adversely affected, the approach would be to develop a statewide program. In either event, the procedures suggested herein would be applicable.

Assuming the problem area designation approach is accepted, the suggestion is to delineate the basin/watersheds on either state or county maps for transmission to the local level (see item 6). Surface mine areas, stream reaches affected by hydrologic modifications, and other information could also be shown on maps.

A number of information sources are available for the watershed boundary delineations including:

U.S. Department of Agriculture Conservation Needs Inventory
River Basin Surveys and Investigations
U.S. Department of Agriculture Watershed and Flood Prevention Projects
U.S. Department of Agriculture River Basins Atlas
River Basin Commission Studies and Reports
Inter-Agency Studies and Reports
U.S. Geological Quadrangle Survey Maps
U.S. Geological Survey State Hydrologic Unit Maps
State Water Resource Studies and Reports

4. Local Level Guidelines.

Key Elements:

Procedures
Report

Discussion:

Procedures. The state level task force (or the lead state agency) should develop "Local Level Guidelines" outlining the tasks to be undertaken at the local level together with procedural and schedule information designed to achieve reasonable uniformity incident to a state compilation. The basic tasks to be undertaken at the local level are outlined in items 5-9 of this framework guide.

The time frame for local level action would depend on the amount of detail requested and the degree of sophistication required. In general, a time period of about three months should prove satisfactory for generating the data from local sources.

Report. A report outline would serve a useful purpose in designating those items to be covered in the local level report and in facilitating the statewide compilation of information.

LOCAL LEVEL

5. Task Force Organization

Key Elements:

Leadership Assignment
Membership
Local Level Guidelines

Discussion:

Leadership Assignment. The initiative for organizing the local level task forces and the unit of organization (county, basin, area) could be taken either through the state level task force and/or a local entity. It is suggested that the local organizational level be the county and that the leadership role be exercised by the local conservation district (which in most cases is established on a county basis).

The advantages of the county as the local unit are several. In most instances, representatives of the state and federal agencies are assigned to a county or are assigned to at least service a county in the case of an area arrangement. These persons reflect perhaps the greatest knowledge of local non-point source conditions and situations. Moreover, should the county and municipalities contained therein serve a key role in program implementation as covered in the regulatory approach of Chapter Fifteen, their participation in the planning and development stages would familiarize them with the entire concept and help create a greater public awareness.

The suggestion to assign leadership to the local conservation district is based on the fact that the tasks to be performed are in line with their mission, they have perfected working arrangements with most of the expected participants, and they represent a type of citizen-guided endeavor.

A representative(s) of the state task force could aid in establishing the local task force and in outlining and coordinating the jobs to be done.

Membership. Membership of the local level task forces should generally encompass local representatives of those serving on the state task force. In addition, representatives of the county and municipalities should be invited to participate, as well as public interest groups.

As in the case of the state task force, consideration should be given to the need for a steering committee, sub-task forces, and/or staff support with periodic meetings of the larger group for review and approval purposes.

Local Level Guidelines. A representative(s) of the state task force should present the "Local Level Guidelines" at the first or an early meeting of the local task force to explain the activities to be undertaken. At this or in subsequent meetings, firm agreements and arrangements should be perfected to accomplish the various tasks. The "Local Level Guidelines" could, for example, contain a model local level work plan to facilitate the arrangements.

The need for staff support should also be considered and any needed financial arrangements made if not already handled as a part of the state task force organization.

6. Problem Area Designation Review

Key Elements

Review of Problem Area Designations
Recommended Additions/Deletions

Discussion:

Review of Problem Area Designations. The first job to be undertaken by local task forces would be to review the problem area designations (watershed delineations, surface mine areas, etc.) supplied by the state task force as a result of its activities under item 3 of this guide. A representative(s) of the state task force may wish to be present to explain the basis of the designations.

Based on local knowledge and judgment, local task forces would be asked to confirm if a problem in fact exists. Other considerations such as relative priorities could be elicited.

Agreement on problem areas would be a substantial step forward in gaining public acceptance of the need for a non-point source pollution control program. The problem area review process would provide an excellent opportunity for a public hearing(s).

For those watersheds crossing county boundaries, local task forces could agree on the procedure for coordination or the state task force could simply assign the responsibility to a local task force.

Recommended Additions/Deletions. Local task forces might have recommendations for adding or deleting areas, and could include information as the basis for their recommendations.

7. Non-Point Source Problem Identification

Key Elements:

Kinds of Pollutants
Sources of Pollutants

Discussion:

Kinds of Pollutants. Representatives (perhaps a sub-task force group) of the local task force should proceed to list the kinds of pollutants affecting the stream segment(s) by the designated problem areas. Information supplied by the state task force should aid in this endeavor since some water quality sampling presumably would have been involved. Tables 1-1 through 1-9 of Chapter One lists a number of kinds and sources of pollutants and would be of aid as a guide. Chapter Five of this document discusses problem identification and contains some indicators that should be of value.

Sources of Pollutants. Similarly, the sources of pollutants should be listed. The quantification aspects are associated with item 8 of this guide. If desired, the sources could be listed by those categories specified in Element (j) of 40 CRF Part 131.11.

8. Non-Point Source Control Needs

Key Elements:

Estimating Extent of Problem(s) and Associated Best Management Practices
Costs
Impacts

Discussion:

Estimating Extent of Problem(s) and Associated Best Management Practices. Chapter One describes the technical guides including soil and site information, resource management systems, and practice standards and specifications. Chapter Eleven contains a discussion of resource management systems and best management practices. The soil, land use, and management classifications and the detailed practice standards and specifications portions of the technical guides are directly applicable in establishing best management practices.

Chapter Eleven also discusses some techniques for determining the kinds and amounts of best management practices needed to treat those areas from which the pollutants stem. Basically, the determination involves the interrelationship of land use (or management systems), kind of soil (usually soil groupings) and the associated conservation practices required for treatment. In brief, the techniques presented include:

(a) U.S. Department of Agriculture Conservation Needs Inventory samples

(b) Representative conservation plan samples

(c) Representative typical farm enterprise samples

(d) Representative sub-watershed areas selected for detailed study

(e) Point samples

(f) Use of general soil map to determine areas of potential erosion

Using the information described in the first paragraph above and one (or similar) of the techniques in the second paragraph, representatives (perhaps a sub-task force group) of the local task forces would be able to determine for each watershed problem area the kinds and amounts of best management practices needed for dealing with sediment, organic (animal wastes); and salt (irrigation) pollutants. Any of the techniques outlined above should yield reasonable accurate estimates for planning purposes although (b) and (d) might be more reliable since they more closely approach actual on-the-ground situations.

Unless allowances were made in the sampling process for best management practices already applied, the estimates derived would be for total best management practices needs. Records are available in the conservation district to estimate best management practices applied to date, which can be subtracted from total needs to yield the remaining best management practices needs (the non-point source control needs).

Depending on the nature and scope of the sampling procedure, some additional studies in support of the above may be warranted. These could include such items as surface mine areas, roadside erosion, streambank erosion, and construction activities. In the latter case, county and/or municipal planning commissions might be helpful with respect to growth patterns and estimates.

Costs. From information available through the conservation district, cost and other data could be generated at the local level. For example, estimates could be provided for:

Cost of Application (Installation) of best management practices

Cost of Operation and Maintenance of best management practices

Cost of Replacement of best management practices (life-span of practices)

Cost of Technical Assistance Needed to Install best management practices

Cost of Incentive Program

Cost of Administering non-point source program at local level

Expected Participation by Land Users with and without an incentive program

Other

Impacts. Depending on the desires of the state task force, observations could be solicited from the local level task forces on the environmental, social, and economic impacts of a non-point source pollution control program. Similarly, expressions on target abatement dates and other aspects could be sought.

9. Report

Key Elements:

Narrative/Tabular Information
Maps

Discussion:

Narrative/Tabular Information. To achieve reasonable uniformity and to facilitate compilation, the state task force may wish to provide a detailed report outline for the narrative and tabular portions of the local level task force reports. The information to be included would largely consist of that associated with items 6, 7, and 8 of this framework guide. They would be transmitted to the state task force.

Maps. Maps supplementing the narrative report would be a useful adjunct and would be especially valuable for public hearings or public interest group reviews.

STATE LEVEL

10. Review of Local Level Reports.

Key Elements:

Adequacy
Uniformity

Discussion:

Adequacy/Uniformity. Representatives of the state task force, either the staff support group or a sub-task force, should review local task force reports for adequacy and for a reasonable degree of uniformity. It may be necessary to contact local task forces during this review to clarify portions of the reports or to seek reasons for widely divergent views.

11. Compilation of Statewide Non-Point Source Control Needs

Key Elements:

Compilation
Report

Discussion:

Compilation. From the local task force reports, representatives of the state task force would compile an estimate of statewide needs. For some of the items a simple tabulation might suffice. For others--largely the judgment items or impacts--a narrative might be required, e.g. an opinion survey.

Report. The compilation should result in a report suitable for review and study by the state task force in general and the state soil conservation agency and the state water quality management agency in particular.

12. Non-Point Source Program Formulation

Key Elements:

Legislative Review
Analysis of Costs and Impacts
Target Abatement Date(s)
Voluntary/Regulatory Program Considerations
Management Agency(ies)
Financial Considerations
Best Management Practices Handbook

Discussion:

Legislative Review. A review of state/county/municipal laws, ordinances, rules, regulations, etc., pertaining to non-point source pollution controls should be undertaken. There may already exist such items as erosion and sediment controls, mining laws, and forest practice acts which should be inventoried and analyzed for adequacy and for possible management agency designations or implementing mechanisms. For some non-point source categories the necessary controls and delivery system may already be in place. For others new approaches or new state legislation/rules/regulations/authorities may need to be developed.

Analysis of Costs and Impacts. Some form of a benefit/cost analysis is an essential ingredient in the program formulation process and in the selection of non-point source controls. The relationship of total benefits and the private and social costs, as well as the impacts or groups affected, is basic to the decision-making process.

In making this analysis Section 5 (Economic Considerations) of "Control of Water Pollution from Cropland, Volume I" (available from Environmental Protection Agency as Report No.EPA-600/2-75-026a and from USDA's Agricultural Research Service as Report No. ARS-H-5-1) would be of considerable help. Representatives of the state land grant university and the state representative of the USDA Economic Research Service could provide particularly valuable aid in this regard.

Target Abatement Date. The establishment of target abatement date(s) may well vary by non-point source categories depending on the nature and extent of the problems. The date(s) would also be influenced by the analysis of costs and impacts, availability of legislation and funding, and by public acceptability generally.

Consideration may need to be given to a phased approach, dealing with the most critical problems over the first few years and then gradually with the others.

Voluntary/Regulatory Program Considerations. Chapter Fifteen contains a discussion of voluntary and regulatory approaches. Also outlined in the chapter are suggested program structures for both approaches.

Management Agencies. The selection of management agency(ies) will probably vary by non-point source categories and, of course, by different state leglislative, organizational, and institutional patterns.

Chapters Fifteen and Sixteen discuss a possible program structure and conservation district implementation capabilities with regard to sediment pollutants, organic pollutants (animal wastes), and mineral salt pollutants (irrigation).

Financial Considerations. Another consideration in the program formulation stage is the matter of finances. Both the amounts and sources (federal, state, local) of funds need to be identified for such items as information and education efforts, training programs, administrative costs, technical assistance costs, and special incentive program costs.

Best Management Practices Handbook. A best management practices handbook would need to be developed as a public information document and an implementing tool.

Chapter Eleven contains a discussion of the link between local conservation district technical guides and best management practices and offers a suggested format for the individual best management practices to be included in a handbook.

13. Recommended Non-Point Source Program

Key Elements:

- Program Strategy
- Proposed Program
  - Voluntary/Regulatory
  - Target Abatement Date(s)
  - Management Agency(ies)
- Funding
- Executive/Legislative Action

Discussion:

Program Strategy. Culmination of the efforts outlined in items 1 through 12 of this framework guide would be a recommended non-point source program. Basic to the task would be development of a program strategy covering such items as the kind of program (voluntary or regulatory), non-point source pollutants to be controlled (variable approaches may be needed by pollutant sources), priorities, and the like.

Proposed Program. Should a voluntary approach be selected, appropriate institutional arrangements would need to be considered and draft agreements drawn. Target abatement dates would need to be estimated and management agencies and/or implementing agencies identified. The nature and scope of funding would also need consideration as well as a "program package" for use in public hearings and with executive/legislative groups.

In the event a regulatory approach were selected, appropriate implementing authority (if not available) together with information regarding the nature and scope of the program would need to be considered. Proposed state legislation and/or regulations would need to be drawn with the principal features of the program either included therein or as supporting materials.

Funding. Concurrent with the proposed program (voluntary or regulatory) and assuming funding would be derived through the federal and/or state appropriation processes, funding proposals would need to be advanced and appropriate legislation drawn.

Executive/Legislative Action. Should adequate state implementing authority already exist, perhaps an executive (governor) and legislative (state legislature) review and endorsement would be all that would be required to trigger either a voluntary or regulatory program. However, if new legislation is proposed, formal executive/legislative action would be required. Proposed appropriations would, of course, require legislative action. In either event, an executive/legislative endorsement would tend to enhance public acceptability of the program.

STATE/LOCAL LEVEL

14. Non-Point Source Program Implementation

Key Elements:

Information and Education
Training
Model Ordinances/Regulations
Institutional Arrangements
Financial Arrangements

Discussion:

Information/Education. Following executive/legislative endorsement and/or approval of the non-point source pollution control program and the requisite funding, implementation could begin. An early effort in this regard would be a vigorous information and education program. Leadership for this activity might well be vested in the state's Cooperative Extension Service.

Training. Training sessions may be needed. If the approaches outlined in Chapter Fifteen of this document were adopted, leadership would accrue to the state soil conservation agency.

Model Ordinances/Regulations. In the case of a regulatory program developed along the lines described in Chapter Fifteen, preparation of model ordinances/regulations would be of considerable value in avoiding duplication of effort, in achieving a reasonable degree of uniformity, and in assuring adequacy.

Institutional Arrangements. Institutional arrangements would need to be perfected and agreements made.

Financial Arrangements. For whatever funding involved in the program (administrative, technical assistance, incentives), appropriate financial arrangements would need to be made.

APPENDIX I-1

ENVIRONMENTAL PROTECTION AGENCY

Policies and Procedures for the State Continuing Planning Process

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Preparation of Water Quality Management Plans

Procedures for Providing Grants to State and Designated Areawide Planning Agencies

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SUBCHAPTER D—POLICIES AND PROCEDURES FOR STATE CONTINUING PLANNING PROCESS

[FRL 461-4]

PART 130—POLICIES AND PROCEDURES FOR CONTINUING PLANNING PROCESS

Policies and Procedures for the State Continuing Planning Process

On July 16, 1975, notice was published in the FEDERAL REGISTER, 40 FR 29882, that the Environmental Protection Agency was proposing to amend the policies and procedures for the State continuing planning process (40 CFR Part 130) pursuant to sections 208 and 303(e) of the Federal Water Pollution Control Act Amendments of 1972, Pub. L. 92-500, 86 Stat. 816 (1972); (33 U.S.C. 1251 et seq.) (hereinafter referred to as the Act).

On September 8, 1975, notice was published in the FEDERAL REGISTER, 40 FR 41648, that the Environmental Protection Agency was proposing to amend the regulations (40 CFR Part 126) which describes the policies and procedures for designating areas and agencies in accordance with section 208(a) (2), (3), or (4) of the Act. The designation regulations have now been incorporated into 40 CFR Part 130. Part 131 of this Chapter has also been amended. The amendments are in accordance with a Court Order issued by Judge John Lewis Smith, Jr., in Natural Resources Defense Council et al. v. Train, et al., D.C. D.C. Civ. Act. No. 74-1485, which stipulates that Section 208 planning must be conducted by the States in all areas that are not designated in accordance with section 208(a) (2) through (4) of the Act.

Sections 303(e) and 208 of the Act require State and designated areawide planning agencies to submit a continuing planning process which is consistent with the Act. The continuing planning process directs the development of water quality management plans and implementing programs prepared pursuant to sections 208 and 303(e) of the Act and Part 131 of this Chapter (Preparation of Water Quality Management Plans). All States have a continuing planning process which has been approved previously by EPA; these amended regulations, however, will necessitate revision of the States continuing planning process.

The amendments to 40 CFR Parts 130 and 131 are specifically designed to incorporate section 208 requirements for both State and designated areawide planning agencies into a single set of regulations that describes the policies and procedures for such planning. Regulations under 40 CFR Part 35, Subpart A describe the procedures for providing grants to both State and areawide planning agencies for the conduct of section 208 planning. This consolidation of the requirements of section 208 for areawide planning agencies and sections 303(e) and 208 for State planning agencies will establish a single Statewide process that fulfills all applicable requirements for water quality management planning and implementation under the Act.

These amended regulations describe the necessary elements of, and provide procedures for review, revision, and approval of a State's continuing planning process. In addition, these regulations now provide the mechanism for States to satisfy the Statewide requirements of section 208. They also provide the States with a mechanism for satisfying portions of sections 303(c) (Review and revision of water quality standards); 303(d) (Critical waters and total maximum daily loads); 305(b) (Assessment and projection of water quality and related information, including nonpoint sources); 314(a) (Clean lakes); and 516 (b) (Federal/State estimate of publicly owned treatment works construction needs); they also provide data for 104 (a) (5) (Federal report on water quality).

The broad goals of the continuing planning process are to assure that the necessary institutional arrangements and management programs are established to make and implement coordinated decisions designed to achieve water quality goals and standards; to develop a Statewide (State and areawide) water quality assessment; and to establish water quality goals and State water quality standards which take into account overall State and local policies and programs, including those for management of land and other natural resources; and to develop the strategic guidance for preparing the annual State program plan required under Section 106 of the Act. Assistance to State and local agencies under Section 106 is dealt with in Subpart B of 40 CFR Part 35.

The level of detail of water quality management plans will be tailored to the water quality problems of the area, varying from intensive planning in designated, complex problem areas to minimal planning where the State certifies that no water quality problems exist.

The timing for development and the content of plans will be established by agreement between the State and the Regional Administrator, consistent with the following:

(a) Phase I plans consist of those plans submitted prior to July 1, 1975, or those plans submitted prior to July 1, 1976, where an extension of up to one year has been granted by the Regional Administractor for specific basins or other approved planning areas. For Phase I, the requirements for planning are those requirements set forth in 40 CFR Parts 130 and 131, "Water Quality Management Basin Plans," promulgated on June 3, 1974.

(b) Phase II plans consist of those plans, or portions thereof, submitted after Phase I plans are approved. Initial Phase II State water quality management plans and areawide water quality management plans must be completed, adopted, certified, and submitted to the Regional Administrator for approval no later than November 1, 1978. The plans are to conform with the requirements of Parts 130 and 131 as amended.

Regulations under Part 131 of this Chapter describe requirements for the preparation of State and areawide water quality management plans pursuant to the State's continuing planning process. Such plans form a basis for implementing applicable point and nonpoint source controls in order to achieve the requirements of the Act. These plans are to consist of such elements as are necessary for sound planning and program management in the area covered by the plan. Regulations under Part 35, Subpart A of this Chapter set forth the procedures for obtaining grants for State and areawide water quality management planning.

Regulations under Part 35, Subpart B of this Chapter describe requirements for the preparation of the annual State program plan. Part 131 and Part 35, Subpart B regulations should be consulted during the review and revision of the continuing planning process under this Part 130. Additional guidelines concerning the continuing planning process, the development of State and areawide water quality management plans, and the development of the annual State program plans will be prepared to assist the State and areawide planning agencies in carrying out the provisions of these regulations.

Federal properties, facilities, and activities are subject to Federal, State, interstate, and local standards and effluent limitations for control and abatement of pollution. The State's planning process should include provision for Federal sources. It is contemplated that Federal agencies will provide information to the States in accordance with procedures established by the Administrator.

Written comments on the proposed rulemaking were invited and received from nearly 100 interested groups, including EPA Regional Offices, State and local governments, other Federal agencies, industrial organizations and special interest groups. In addition, verbal comments were obtained from representatives of State and local government. All written comments are on file with the Agency. Most of these comments have been adopted or substantially satisfied by editorial change, deletions from, or additions to the regulations. The majority of substantive comments centered around the issues discussed below.

1. State and Local Governmental Interrelationships.

From the outset of the development of these regulations, State and local government representatives have suggested that EPA describe in the regulations the specific responsibilities and relationships between State, local and Federal governments relating to 208 planning and implementation requirements.

The final regulations reflect the primary role of the States in coordinating planning on a Statewide basis, consistent with Judge Smith's Court Order, and describe the general requirements for coordinating integration and communication between State and local governments. The regulations provide the flexibility to allow and, indeed, encourage State and local government to work out their own appropriate institutional arrangements relating to water quality management planning and implementation. In this regard, the regulations reflect the specific mandates of the Act and, additionally contain a requirement for establishment of State and local policy advisory committees in order to assure that adequate and appropriate results from local, State and Federal governments will be included in the development and implementation of water quality management plans.

2. Relationship of Planning Process and Other Programs.

Because State and designated areawide water quality management planning will ultimately serve as the basis for implementation of essentially all programs under the Act, the relationship of and impact on other programs was carefully formulated in the proposed regulations.

The major concern relating to provision of legal sanctions (i.e., withholding of construction grants and/or permits in the absence of complete planning) was resolved prior to the proposed regulations as a result of an EPA legal opinion. Thus, the final regulations do not incorporate sanctions for noncompliance, but provide that once a plan has been approved by the Regional Administrator no permits shall be issued or construction grants approved which are in conflict with the plan. Recognizing that other determinations outside the planning process by EPA and/or the States could lead to inconsistencies with approved plans, the final regulations clarify how such determinations are to be dealt with in revising the plans.

3. Designation Procedures for Areawide Planning Areas and Agencies.

Many comments indicated that the proposed procedures were unclear as to whether the Governor made the final decisions on designations or whether the chief elected officials could override the Governor's decision. In addition, many comments also indicated that the proposed regulations put an undue burden on States that have already designated the eligible areas and agencies within their States by requiring them to reopen the designation process.

The designation procedures have now been clarified to indicate that the Governor makes the final designation decisions. However, the chief elected officials are given the opportunity to fully participate in the Governor's decision. In addition, the designation procedures have been revised to provide for a waiver for those States where the Regional Administrator determines that the initial designation process resulted in the designation of all eligible areas and agencies within the State.

4. Lack of Adequate Manpower and Funding.

Concern was raised regarding the lack of adequate manpower and funding needed for the State and areawide planning agencies to conduct 208 planning. The final regulations recognize that the ability to conduct this planning in the nonpoint source area will be dependent upon the availability of additional resources. Thus, these regulations have been amended to allow flexibility for the States in reorienting their water quality management programs. The State/EPA agreement on timing and level of detail and the areawide planning agency work plan are to be used as the mechanisms to identify the specific planning to be conducted by agreement with the EPA Regional Administrator. The timing of plan preparation, however, is constrained by the November 1, 1978 deadline. Thus, the States and areawide planning agencies, are required to tailor their individual planning processes to fit the specific planning constraints facing the agency as well as the specific water quality problems to be solved.

5. Water Quality Standards Revisions/Antidegradation.

State and areawide planning agencies have been concerned throughout the development of these regulations that EPA has not adequately addressed the issue of revisions to water quality standards and development of a Statewide policy on antidegradation. These regulations set forth clearly EPA's policy regarding the role of water quality standards in achieving the goals of the Act and the Agency's antidegradation position.

EPA strongly supports the establishment of water quality standards which will support the protection and propagation of fish, shellfish and wildlife and recreation in and on the water. In furtherance of this objective, EPA believes that water quality standards should be established at levels consistent with the national water quality goal of section 101(a)(2) of the Act for every stream segment wherever those levels are attainable. The guidance to the States in these regulations regarding revisions of their water quality standards is based on this general principle. While standards at these levels may not be attainable now for some stream segments, EPA expects the State to continue to review their standards and upgrade them to the national water quality goal whenever such standards become attainable.

EPA Regional Administrators will review the actions of the States regarding these revisions and will, when appropriate, request additional information from the States to evaluate the basis for establishing standards at levels less stringent than the national water quality goal.

These regulations further provide that existing water uses shall be maintained, and where existing water quality standards do not specify and protect the existing uses, that the State shall upgrade its standards to achieve such specification and protection of these uses. These regulations also provide that designated uses in existing water quality standards shall be maintained and that the existing standards shall not be downgraded to designate and protect less restrictive uses unless one or more of the criteria listed in § 130.17(c)(3) are met.

It should also be emphasized that in addition to the water quality standards established by the States, EPA's commitment to achieving the national water quality goal will also be implemented through the application of section 302 of the Act. That provision allows the Administrator to establish effluent limitations for point sources more stringent than the technology-based limitations mandated for 1983 when a greater reduction in discharges is necessary to achieve the national water quality goal for a particular stream segment. The statute allows a discharger to request adjustments of such limitations if the discharger demonstrates that there is no reasonable relationship between the economic and social costs and the benefits to be obtained. EPA is convinced, however, that the adoption of stringent water quality standards, supplemented with appropriate use of Section 302 limitations will make the achievement of the national water quality goal a reasonable prospect.

The Agency's antidegradation policy is the same in many respects as the policy that EPA and its predecessor Agency have encouraged the States to adopt in the past. The policy provides for protection of existing instream water uses and, for water whose quality exceeds the national water quality goals, prohibits degradation except to allow necessary and justifiable economic and social development. In no event may degradation of water quality interfere with or become injurious to existing instream water uses. The effect of including antidegradation requirements in these regulations is to require the States to review their current antidegradation policies and to establish a mechanism, including a public process, for implementing the State antidegradation policies.

As discussed above, these regulations are issued in response to an Order of the District Court for the District of Columbia, and contain a provision for plan submission no later than November 1, 1978, as required by the Order of the Court. Given the limited amount of time for the plans to be completed, and the consequent need for both State and areawide agencies to move forward quickly to adjust their planning processes to these regulations, good cause is hereby found for making these regulations effective upon publication.

In consideration of the foregoing, 40 CFR is hereby amended by deleting the existing parts 126 and 130 by adding a new Part 130 to read as follows.

Dated: November 21, 1975.

RUSSELL E. TRAIN,
Administrator.

Subpart A—Scope and Purpose; Definitions

Sec.
130.1 Scope and purpose.
130.2 Definitions.

Subpart B—General Requirements

130.10 Planning process requirements.
130.11 Agreement on level of detail and timing of State water quality management plan preparation.
130.12 Designation of State planning agency.
130.13 Designation of areawide planning areas and agencies.
130.14 Delegation of planning responsibilities.
130.15 Designation of management agencies.
130.16 Intergovernmental cooperation and coordination.
130.17 Water quality standards.

Subpart C—Requirements for State Strategy

130.20 State strategy: contents and submission.

Subpart D—Relationship of Planning Process and Other Programs

130.30 Relationship to monitoring and surveillance program.
130.31 Relationship to municipal facilities program.
130.32 Relationship to National Pollutant Discharge Elimination System.
130.33 Relationship of State and designated areawide planning programs.
130.34 Relationship to other local, State, and Federal planning programs.
130.35 Planning requirements for Federal properties, facilities or activities.

Subpart E—State Planning Process Adoption, Approval and Revisions Procedures; Separability

130.40 Adoption and submission of State process description.
130.41 Review and approval or disapproval of State process.
130.42 Withdrawal of approval of State process.
130.43 Review and revision of State process.
130.44 Separability.

AUTHORITY: Secs. 106, 208, 303(d), 303(e), 305(b), 314, 501, 516(b) of the Federal Water Pollution Control Act, as amended; Pub. L.

92-500, 86 Stat. 816 (1972); (33 U.S.C. 1251 et. seq.).

Subpart A—Scope and Purpose; Definitions

§ 130.1 Scope and purpose.

(a) This part establishes regulations specifying policies, procedures, and other requirements for the continuing planning process for the State pursuant to sections 208 and 303(e) of the Act and for designated areawide agencies pursuant to section 208(b) of the Act. The regulations established in this part and in Part 131 of this Chapter define and implement the requirements for State and areawide planning and implementation pursuant to section 208 of the Act and for carrying out other provisions of the Act. These regulations apply to State and designated areawide planning agencies that are responsible for planning pursuant to section 208 and 303(e) of the Act.

(b) The intent of this part is to unify and integrate the State and areawide water quality management planning and implementation requirements of section 208 and other provisions of the Act.

(c) The broad goals of the continuing planning process are to assure that necessary institutional arrangements and management programs are established to make and implement coordinated decisions designed to achieve water quality goals and standards; to develop a Statewide (State and areawide) water quality assessment, and to establish water quality goals and State water quality standards which take into account overall State and local policies and programs, including those for management of land and other natural resources; and to develop the strategic guidance for preparing the annual State program plan required under section 106 of the Act.

(d) The "continuing planning process" is a time-phased process by which the State, working cooperatively with designated areawide planning agencies:

(1) Develops a water quality management decision-making process involving elected officials of State and local units of government and representatives of State and local executive departments that conduct activities related to water quality management.

(2) Establishes an intergovernmental process which provides for water quality management decisions to be made on an areawide or local basis and for the incorporation of such decisions into a comprehensive and cohesive Statewide program. Through this process, State regulatory programs and activities will be incorporated into the areawide water quality management decision process.

(3) Develops a broad based public participation aimed at both informing and involving the public in the water quality management program.

(4) Prepares and implements water quality management plans, which identify water quality goals and established State water quality standards, define specific programs, priorities and targets for preventing and controlling water pollution in individual approved planning areas and establish policies which guide decision-making over at least a twenty-year span of time (in increments of five years).

(5) Based on the results of the Statewide (State and areawide) planning process, develops the State strategy, to be updated annually, which sets the State's major objectives, approach, and priorities for preventing and controlling pollution over a five-year period.

(6) Translates the State strategy into the annual State program plan (required under section 106 of the Act), which establishes the program objectives, identifies the resources committed for the State program each year, and provides a mechanism for reporting progress toward achievement of program objectives.

(7) Periodically reviews and revises water quality standards as required under section 303(c) of the Act.

§ 130.2 Definitions.

As used in this part, the following terms shall have the meanings set forth below.

(a) The term "Act" means the Federal Water Pollution Control Act, as amended; Pub. L. 92-500, 86 Stat. 816 (1972); (33 U.S.C. 1251 et seq.).

(b) The term "EPA" means the United States Environmental Protection Agency.

(c) The term "Administrator" means the Administrator of the Environmental Protection Agency.

(d) The term "Regional Administrator" means the appropriate EPA Regional Administrator.

(e) The term "continuing planning process" means the continuing planning process, including any revision thereto, required by sections 208 and 303(e) of the Act for State agencies and section 208(b) of the Act for designated areawide agencies.

(f) The term "water quality management plan" means the plan for managing the water quality, including consideration of the relationship of water quality to land and water resources and uses, on an areawide basis, for each EPA/State approved planning area and for those areas designated pursuant to section 208a (2), (3), or (4) of the Act within a State. Preparation, adoption, and implementation of water quality management plans in accordance with regulations under this part and Part 131 of this Chapter shall constitute compliance with State responsibilities under sections 208 and 303(e) of the Act and areawide responsibilities under section 208 of the Act.

(g) The term "State planning area" means that area of the State that is not designated pursuant to section 208(a) (2), (3), or (4) of the Act. State planning areas are to be identified in the planning process description that is submitted by the State for approval by the Regional Administrator. Depending upon the requirement being considered, the State planning area may be subdivided into "approved planning areas' that may include the entire State or portions of the State defined by hydrologic, political, or other boundaries.

(h) The term "designated areawide planning area" means all areas. designated pursuant to section 208(a) (2), (3), or (4) of the Act and § 130.13.

(i) The term "State planning agency" means that State agency designated pursuant to section 208(a)(6) of the Act and § 130.12(a).

(j) The term "designated areawide planning agency" means that agency designated in accordance with section 208(a) (2), (3), or (4) of the Act.

(k) The term "effluent limitation" means any restriction established by a State or the Administrator on quantities, rates, and concentrations of chemical, physical, biological, and other constituents which are discharged from point sources into navigable water, waters of the contiguous zone, or the oceans.

(l) The term "schedule of compliance" means in reference to point and nonpoint sources of pollutants, a sequence of actions or operations leading to compliance with applicable effluent limitations, other limitations, prohibitions, practices, or standards which are contained in a National Pollutant Discharge Elimination System permit or in a State permit or other regulatory program which is legally binding on the owner or operator of the source.

(m) The term "target abatement dates" means:

(1) For point sources, a sequence of actions or control measures which have not yet been formally adopted through the permit process.

(2) For nonpoint sources, a sequence of remedial measures, actions, or operations which have not been formally adopted through implementation of management or regulatory programs established pursuant to approved State water quality management plans, or portions thereof.

(n) The term "National Pollutant Discharge Elimination System" means the national permitting system authorized under section 402 of the Act, including any State permit program which has been approved by the Administrator pursuant to section 402 of the Act.

(o) The term "segment" means a portion of an approved planning area, the surface waters of which have common hydrologic characteristics (or flow regulation patterns): common natural physical, chemical and biological characteristics and processes; and common reactions to external stresses, such as the discharge of pollutants. Segments will be classified as either a water quality segment or an effluent limitation segment as follows:

(1) *Water quality segment.* Any segment where it is known that water quality does not meet applicable water quality standards and/or is not expected to meet applicable water quality standards even after the application of the effluent limitations required by sections

91(b)(1)(B) and 301(b)(2)(A) of the t.

(2) *Effluent limitation segment.* Any segment where it is known that water quality is meeting and will continue to meet applicable water quality standards or where there is adequate demonstration that water quality will meet applicable water quality standards after the application of the effluent limitations required by sections 301(b)(1)(B) and 301(b)(2)(A) of the Act.

(p) The term "significant discharge" means any point source discharge for which timely management action must be taken in order to meet the water quality objectives within the period of the operative water quality management plan. The significant nature of the discharge is to be determined by the State, but must include any discharge which is causing or will cause water quality problems.

(q) The term "Best Management Practices" (BMP) means a practice, or combination of practices, that is determined by a State (or designated areawide planning agency) after problem assessment, examination of alternative practices, and appropriate public participation to be the most effective, practicable (including technological, economic, and institutional considerations) means of preventing or reducing the amount of pollution generated by nonpoint sources to a level compatible with water quality goals.

(r) The term "residual wastes" means those solid, liquid, or sludge substances from man's activities in the urban, agricultural, mining and industrial environment remaining after collection and necessary treatment.

(s) The definitions of the terms contained in Section 502 of the Act shall be applicable to such terms as used in this part unless the context otherwise requires.

Subpart B—General Requirements

§ 130.10 Planning process requirements.

(a) The State and designated areawide planning agencies shall establish a planning process which provides for the establishment of necessary institutional arrangements and management programs to make and implement coordinated decisions designed to achieve water quality goals and standards. The planning process shall include:

(1) Public participation during plan development, review, and adoption in accordance with section 101(e) of the Act and in accordance with Part 105 of this Chapter;

(2) Adequate intergovernmental input in the development and implementation of water quality management plans as described in § 130.17;

(3) The coordination and integration of the water quality management planning in State planning areas and in designated areawide planning areas as described in § 130.33, and coordination of water quality management planning with related Federal, State, interstate, and local comprehensive, functional, and other developmental planning activities, including land use and other natural resources planning activities, as described in § 130.34;

(4) The preparation, adoption, and revision, of water quality management plans for the appropriate areas and waters within the State that fulfill the requirements contained in Part 131 of this Chapter;

(5) The establishment and implementation of regulatory programs identified in approved water quality management plans prepared pursuant to Part 131 of this Chapter;

(b) In addition to the requirements of § 130.10(a), the State agency planning process shall provide for the following:

(1) The development, review and adoption of water quality standards in accordance with § 130.17(a) and with section 303(c) (1) and (2) of the Act;

(2) The development, adoption and implementation of a Statewide policy on antidegradation, consistent with the criteria identified in § 130.17(d);

(3) The review, and certification of plans for designated areawide planning areas as required pursuant to § 130.33; and

(4) The annual preparation of the State strategy as described in Subpart C of this part.

(c) The description of the State planning process that is to be submitted by the Governor pursuant to § 130.40(b) shall contain, as a minimum, the following:

(1) A description of how each of the requirements specified in § 130.10 (a) and (b) will be achieved.

(2) A listing(s) and a map(s) of the State showing proposed State planning areas in which planning is to be conducted by the State pursuant to this part and Part 131 of this Chapter and a listing(s) and a map(s) showing those areawide planning areas that have been designated or are expected to be designated (including a timetable for designation) under section 208(a) (2), (3), or (4) of the Act in which planning is to be conducted by areawide planning agencies pursuant to § 130.13.

(3) A listing(s) and map(s) of the State showing each segment and its classification.

(4) A State/EPA agreement on the level of detail and the schedule for preparation of State water quality management plans as described in § 130.11.

(5) A schedule for review and revision, where necessary, of water quality standards and for development and adoption of a Statewide policy on antidegradation, together with a schedule of milestones which includes proposed dates for public hearings on the revisions and antidegradation policy. The schedule shall provide that the water quality standards and the antidegradation policy will be reviewed and revised in ample time to be used as a basis for 1977–1983 management and regulatory decisions.

(6) The identification of the State planning agency designated pursuant to § 130.12(a).

(7) A listing of the areawide planning agencies that have been designated by the Governor or the identification of areawide planning agencies that will be designated by the Governor (including a timetable for designation) to perform planning in areawide planning areas designated pursuant to section 208(a)(2) or (3) of the Act and § 130.13(b).

(8) A description of the State's management program to oversee water quality management planning conducted by designated areawide planning agencies, including the monitoring of progress and accomplishment of key milestones specified in the areawide planning agency's work plans, and to otherwise assure timely and meaningful State involvement in the areawide planning process.

(9) A listing of the delegations made pursuant to § 130.14(a) to the agency or agencies that will perform the planning under this part and Part 131 of this Chapter.

(10) A listing of proposed representatives on the policy advisory committee(s) established in accordance with § 130.16(c) for each approved planning area.

(11) A statement that legal authorities required at the local and/or State levels to prepare, adopt, and implement State water quality management plans as required by the planning process exist or will be sought.

§ 130.11 Agreement on level of detail and timing of State water quality management plan preparation.

(a) The appropriate level of detail and timing of State water quality management plan preparation for each proposed State planning area will depend on the water quality problems of the area and the water quality decisions to be made, and shall be established by agreement between the State and the Regional Administrator, after appropriate public participation pursuant to § 130.40.

(b) The agreement shall include an indication of those proposed State planning areas, or portions thereof, wherein the State, with supporting data, certifies that particular water quality and/or source control problems do not exist or are not likely to develop within the timeframe of the plan and, therefore that certain types of planning and implementation will not be undertaken.

(c) The agreement shall provide a sequence for phasing of planning at the appropriate level of detail and in sufficient time to meet the 1983 national water quality goal specified in section 101(a)(2) of the Act, consistent with the provisions of § 130.17. The agreement should assure the orderly integration of applicable past and present planning efforts (including designated areawide planning) with the planning efforts and needs established in this part and Part 131 of this Chapter. The agreement shall define the State's priorities for the development of State water quality management plans, or portions thereof, pursuant to the process and shall be consistent with projected planning resources; provided that initial State and areawide water quality management plans shall be completed, adopted, certified, and submitted to the Regional Administrator in accordance with § 130.20 no later than November 1, 1978.

§ 130.12 Designation of State planning agency.

(a) The Governor shall designate, in accordance with § 130.10(c)(6), a State planning agency to be responsible for the conduct and coordination of the required planning under this part and Part 131 of this Chapter.

(b) Although the State planning agency designated pursuant to § 130.12 (a) may delegate portions of its responsibilities to other State, Federal, local, or interstate agencies in accordance with § 130.14, the State planning agency shall assure that each element of the State's approved planning process is achieved.

§ 130.13 Designation of areawide planning areas and agencies.

(a) The Governor(s) shall identify areawide planning areas pursuant to section 208(a)(2) or (3) of the Act which, as a result of urban-industrial concentrations or other factors, have substantial water quality control problems. A substantial water quality control problem will be deemed to exist when water quality has been or may be degraded to the extent that existing or desired designated water uses are impaired or precluded and when the water quality control problem is complex.

(NOTE: In approving such designations of areawide planning areas, the Administrator will give preference to areas of urban-industrial concentration.)

(b) The Governor(s) shall, after consultation with appropriate elected and other officials of local governments having jurisdiction in those areas identified in accordance with § 130.13(a), designate areawide planning areas provided that:

(1) The affected general purpose or other appropriate units of local government within the boundaries of the areawide planning area have in operation a coordinated waste treatment management system, or show their intent, through a demonstrated effort to obtain and submit resolutions of intent from those governmental units believed to be critical in the planning and implementation of the areawide 208 plan.

(NOTE: In those cases where it is not possible to obtain the necessary resolutions of intent, the Governor, in the designation process, must stipulate that the authorities of the State will be used to assure adequate compliance with the planning and management process requirements of section 208 of the Act.)

(2) The affected units of local government have legal authority to enter into agreements for coordinated wastewater management in compliance with section 208 of the Act.

(3) The water quality problem for the area is not associated with a water pollution control problem for which the State has pre-empted areawide planning pursuant to section 208(b)(4) of the Act.

(c) The Governor(s) shall designate a single representative organization capable of developing effective areawide plans in accordance with section 208 of the Act for each area designated pursuant to § 130.13(b). Each areawide planning agency shall:

(1) Be a representative organization whose membership shall include, but need not be limited to, elected officials of local governments or their designees having jurisdiction in the designated areawide planning area;

(2) Have waste treatment planning jurisdiction in the entire designated areawide planning area;

(3) Have the capability to have the water quality management planning process fully underway no later than one year after approval of the designation;

(4) Have the capability to complete the initial water quality management plan no later than two years after the planning process is in operation; and

(5) Have established procedures for adoption, review, and revision of plans and resolution of major issues, including procedures for public participation in the planning process.

(d) The procedures for designating areawide planning areas and agencies shall be as follows:

(1) Within 60 days after these regulations become effective, the Governor shall:

(i) After communication with chief elected officials of local or regional general purpose units of government in areas not yet designated, identify areas and agencies which he determines to be eligible for designation pursuant to § 130.13 (b) and (c).

(ii) Notify the chief elected officials of local or regional general purpose units of governments of those areawide planning areas and agencies he intends to designate pursuant to § 130.13(d)(1)(i) and request their comments and recommendations.

(2) In areas where the chief elected officials feel that the Governor acted inappropriately in his determination of eligible areas and agencies pursuant to § 130.13(d)(1)(i), such officials may petition the Governor for reconsideration of his determination.

(3) Within 150 days after these regulations become effective and after consideration of recommendations of chief elected officials of local or regional general purpose units of government, the Governor shall:

(i) Hold public meetings or hearings in those areas where he intends to designate an areawide planning area and agency.

(ii) Hold public meetings or hearings in those areas where chief elected officials request designation, but the Governor does not intend to designate.

(iii) Submit his final determination on designations to be made to the Regional Administrator. A record of the public meetings or hearings pursuant to § 130.13 (d)(3)(i) and (ii) shall be made available to the Regional Administrator and the public on request.

(NOTE: The Governor may allow self-designation by chief elected officials of local or regional general purpose units of government pursuant to section 208(a)(4) of the Act. In those cases where the Governor allows a self-designation, the chief elected officials shall submit the request for designation to the Regional Administrator pursuant to § 130.13 (e) or (f).)

(4) The designation procedures set forth in § 130.13(d) (1), (2), and (3) may be waived by the Regional Administrator where he determines that the initial designation process required pursuant to section 208(a) of the Act resulted in the designation of all areas and agencies in the State that meet the criteria set forth in § 130.13 (b) and (c).

(5) The identification and designation of interstate areas shall be in accordance with the provisions of § 130.13 (a) through (d) provided, however, that appropriate interstate agencies shall be consulted, and the designation shall be the joint action of the Governors of all the affected States.

(e) Within 150 days after these regulations become effective, for each areawide planning area and agency to be designated during FY 1976, the Governor shall provide the following information to the Regional Administrator:

(1) An exact description of the boundaries of each area including a statement relating the boundaries of any area to the boundaries of the SMSA(s) contained within or contiguous to the area or, for those areas not within a SMSA, a statement relating the boundaries of the area to the nearest SMSA, and a statement indicating:

(i) Population of the area;

(ii) Nature of the concentration and distribution of industrial activity in the area;

(iii) Degree to which it is anticipated that the area could improve its ability to control water quality problems were it designated as an areawide planning area; and

(iv) Factors responsible for designation of the areawide planning area as described in § 130.13(a).

(2) Identification and supporting analysis of each water quality segment included in each area, as identified pursuant to § 130.10(c)(3).

(3) For each area a copy of the charter of existing regional waste treatment management agencies or formally adopted resolutions, if available, which demonstrate that the general purpose units of local government involved will join together in the planning process to develop and implement a plan which will result in a coordinated waste treatment management system for the area. The resolutions shall also state that all applications for grants for construction of a publicly owned treatment works will be consistent with the approved plan and will be made only by the designated management agency.

(4) For each area, the name, address, and official contact for the agency designated to carry out the planning.

(5) A statement on the factors considered in agency designation as described in § 130.13(c).

(6) A summary of public participation in accordance with the requirements set forth in Part 105 of this Chapter.

(f) For areawide planning areas and agencies to be designated after FY 1976, the information received by § 130.13(e) shall be submitted at a later date to be established by the Administrator.

(g) The Regional Administrator and the Administrator shall review each submission pursuant to § 130.13 (e) and (f) to determine compliance with the Act and the criteria set forth in § 130.13 (a) through (d).

(h) Upon completion of his review, the Administrator shall publish notice in the FEDERAL REGISTER and shall notify in writing the appropriate Governor(s) of his approval. The effective date of designation is the date of the Administrator's approval of each designation. In the event that the Administrator disapproves any of the designations, he shall specify his reasons with his notice of disapproval.

(i) The appropriate Governor(s) may from time to time designate additional areawide planning areas and agencies. In such cases, approval of the designation shall be at the discretion of the Administrator, taking into account its consistency with the State continuing planning process. The Administrator will also take into account the ability of any such designated areawide planning agency to develop and submit the areawide plan no later than November 1, 1978.

§ 130.14 Delegation of planning responsibilities.

(a) The State planning agency designated pursuant to § 130.12(a) may delegate responsibility, with the approval of the Regional Administrator, to other State, Federal, local, or interstate agencies for the conduct, where appropriate, of any portion of the State's required water quality management planning under this part and Part 131 of this Chapter.

(NOTE: The States are encouraged particularly to delegate water quality management planning responsibilities to Federal agencies where those agencies express a willingness to accept delegation of State planning responsibilities and possess adequate capability and resources to undertake such planning.)

(b) Locally elected officials of major general purpose units of government, and other pertinent local and areawide organizations within the jurisdiction of a proposed local or interstate planning agency, shall be consulted prior to any delegation of planning responsibility to an agency made pursuant to § 130.14 (a).

(c) Each delegation of planning responsibility to an agency made pursuant to § 130.14(a) of this section shall include:

(1) The agency's name, address, and name of the director; and

(2) The agency's jurisdiction (geographical coverage and extent of planning responsibilities).

(d) In the event that responsibility for preparation of a portion of a State water quality management plan is delegated pursuant to § 130.14(a) to an agency other than the State water pollution control agency, evidence from such other agency shall be supplied which shows acceptance of such delegation of planning responsibility and the agency's capability and intent to comply with the time schedules set forth in the planning process and to develop a plan, or portion thereof, consistent with the laws of the respective State, the requirements of this part, Part 131 of this Chapter, and the Act.

(e) The State planning agency may make additional delegations, as set forth in this section, from time to time. Such delegations shall be accomplished by revising the planning process as provided in § 130.43.

§ 130.15 Designation of management agencies.

(a) Upon completion and submission of a water quality management plan, the Governor shall designate Federal, State, interstate, regional, or local agency(ies) appropriate to carry out each of the provision(s) of the water quality management plan(s).

(b) In the event the State or designated areawide planning agency determines that cooperation from a Federal agency(ies) is required to carry out certain provisions of the plan, the State or designated areawide planning agency shall identify such Federal agency and seek cooperation in accordance with § 130.35.

(c) The Governor may designate a specific agency(ies) to begin implementing an approved portion(s) of the water quality management plan(s) prior to completion of the plan(s).

(d) The Regional Administrator shall accept and approve all designated management agency(ies) unless, within 120 days of a designation, he finds that, the agency(ies) does not have adequate authority, including the requirement that statutory and regulatory provisions required to implement the plan be adopted by the date of plan approval by the Regional Administrator, and capability, as required in § 131.11(0)(2) of this Chapter, to accomplish its assigned responsibilities under the plan. The Regional Administrator shall approve, conditionally approve or disapprove such management agency designations in accordance with the same procedures to be used in approving water quality management plans (see § 131.21 of this Chapter).

(e) The Regional Administrator may withdraw his approval made pursuant to § 130.15(d) in the event that a designated management agency(ies) fails to implement the provision(s) of an approved water quality management plan for which the agency(ies) is assigned responsibility.

§ 130.16 Intergovernmental cooperation and coordination.

(a) The process shall assure that adequate and appropriate areawide and local planning results will be included in the development and implementation of water quality management plans for the State.

(b) Local governments within the State are to be encouraged to utilise existing, or develop, appropriate institutional or other arrangements with local governments in the same State in the development and implementation of water quality management plans, or portions thereof.

(c) The State shall provide a mechanism for meaningful and significant results from local, State, interstate, and Federal units of government. As an element of this mechanism, a policy advisory committee(s) shall be established to advise the responsible planning or implementing agency during the development and implementation of the plan on broad policy matters, including the fiscal, economic, and social impacts of the plan. Use of existing policy advisory committees is encouraged; however as a minimum, this policy advisory committee shall include a majority membership of representatives of chief elected officials of local units of government.

(NOTE: The Regional Administrator may, at the request of a State, agree to a lesser percentage of representation on the policy advisory committee from chief elected officials of local units of government provided there is no substantial disagreement with such a request from the affected local jurisdictions. Any proposal for lesser representation should consider the elements of planning that are being conducted and the traditional local role or interest in the activities covered by the planning.)

(d) The policy advisory committee for designated areawide planning areas shall include representatives of the State and public and may include representatives of the U.S. Departments of Agriculture, Army, and the Interior, and such other Federal and local agencies as may be appropriate in the opinion of EPA, the State(s), and the designated areawide planning agency.

(e) The State shall provide for interstate cooperation (and where necessary, in conjunction with and under the direction of appropriate Federal agencies should provide for international cooperation) whenever a plan involves the interests of more than one State. When a water quality management plan or portion of a plan is under development or is being implemented in the State for an area affecting or affected by waters of one or more other States, the State shall cooperate and coordinate with each such other State in the development and implementation of the water quality management plan pertinent to such area. EPA will provide assistance, upon request, to assure the appropriate cooperation and coordination between other States and Federal agencies.

§ 130.17 Water quality standards.

(a) The State shall hold public hearings for the purpose of reviewing water quality standards and shall adopt revisions to water quality standards, as appropriate, at least once every three years and submit such revisions to the appropriate Regional Administrator pursuant to section 303(c) of the Act.

(b) The water quality standards of the State shall:

(1) Protect the public health or welfare, enhance the quality of water and serve the purposes of the Act;

(2) Specify appropriate water uses to be achieved and protected, taking into consideration the use and value of water for public water supplies, propagation of fish, shellfish, and wildlife, recreation purposes, and agricultural, industrial, and other purposes, and also taking into consideration their use and value for navigation; and

(3) Specify appropriate water quality criteria necessary to support those water uses designated pursuant to § 130.17(b)(2).

(c) In reviewing and revising its water quality standards pursuant to § 130.17(a), the State shall adhere the following principles:

(1) The State shall establish water quality standards which will result in the achievement of the national water quality goal specified in section 101(a)(2) of the Act, wherever attainable. In determining whether such standards are attainable for any particular segment, the State should take into consideration environmental, technological, social, economic, and institutional factors.

(2) The State shall maintain those water uses which are currently being attained. Where existing water quality standards specify designated water uses less than those which are presently being achieved, the State shall upgrade its standards to reflect the uses actually being attained.

(3) At a minimum, the State shall maintain those water uses which are currently designated in water quality standards, effective as of the date of these regulations or as subsequently modified in accordance with § 130.17(c) (1) and (2). The State may establish less restrictive uses than those contained in existing water quality standards, however, only where the State can demonstrate that:

(i) The existing designated use is not attainable because of natural background;

(ii) The existing designated use is not attainable because of irretrievable man-induced conditions; or

(iii) Application of effluent limitations for existing sources more stringent than those required pursuant to section 301(b)(2) (A) and (B) of the Act in order to attain the existing designated use would result in substantial and widespread adverse economic and social impact.

(4) The State shall take into consideration the water quality standards of downstream waters and shall assure that its water quality standards provide for the attainment of the water quality standards of downstream waters.

(d) The Regional Administrator shall approve or disapprove any proposed revisions of water quality standards in accordance with the provisions of section 303(c)(2) of the Act.

(e) The State shall develop and adopt a Statewide antidegradation policy and identify the methods for implementing such policy pursuant to § 130.10(b)(2). The antidegradation policy and implementation methods shall, at a minimum, be consistent with the following:

(1) Existing instream water uses shall be maintained and protected. No further water quality degradation which would interfere with or become injurious to existing instream water uses is allowable.

(2) Existing high quality waters which exceed those levels necessary to support propagation of fish, shellfish and wildlife and recreation in and on the water shall be maintained and protected unless the State chooses, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, to allow lower water quality as a result of necessary and justifiable economic or soical delevolpment. In no event, however, may degradation of water quality interfere with or become injurious to existing instream water uses. Additionally, no degradation shall be allowed in high quality waters which constitute an outstanding National resource, such as waters of National and State parks and wildlife refuges and waters of exceptional recreational or ecological significance. Further the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and feasible management or regulatory programs pursuant to section 208 of the Act for nonpoint sources, both existing and proposed.

(3) In those cases where potential water quality impairment associated with a thermal discharge is involved, the antidegradation policy and implementing method shall be consistent with section 316 of the Act.

Subpart C—Requirements for State Strategy

§ 130.20 State strategy; contents and submission.

(a) Based on current water quality conditions, evaluation of program achievement to date, water quality management plans developed under this part and Part 131 of this Chapter (including basin water quality management plans), and the annual EPA guidance (described in Subpart B of Part 35 of this Chapter), each State shall prepare and update annually a State strategy for preventing and controlling water pollution over a five-year period. The strategy shall contain:

(1) A Statewide assessment of water quality problems and the causes of these problems.

(Note: This assessment may be based on the water quality analysis used to prepare the State's report required under Section 305(b) of the Act. Once the water quality assessment pursuant to § 131.11(b) of this Chapter and the nonpoint source assessment pursuant to § 131.11(d) of this Chapter are developed, the Statewide assessment of water quality problems and causes of these problems should be based on the plan assessments. Such assessments should then be reflected in the State's annual report und section 305(b) of the Act.)

(2) A ranking of each segment based on the Statewide assessment of water quality problems.

(3) An overview of the State's approach to solving its water quality problems identified in paragraph (b)(1) of this section, including a discussion of the extent to which nonpoint sources of pollution will be addressed by the State program.

(4) A year-by-year estimate of the financial resources needed to conduct the program in the State, by major program element (as defined in Subpart B of Part 35 of this Chapter).

(5) A listing of the priorities and scheduling of the State's water quality management plan preparation and implementation, areawide plans, and other appropriate program actions to carry out § 130.20(a)(4).

(6) A brief summary of the State monitoring strategy (described in Appendix A to Subpart B of Part 35 of this Chapter).

(b) The State strategy shall be submitted annually as part of the annual State program submission pursuant to § 35.555 of this Chapter.

Subpart D—Relationship of Planning Process and Other Programs

§ 130.30 Relationship to monitoring and surveillance program.

(a) The State shall assure that an appropriate monitoring program will be established in accordance with provisions of Appendix A to Subpart B of Part 35 of this Chapter.

(b) The process shall provide that each water quality management plan shall be based upon the best available monitoring and surveillance data to determine the relationship between instream water quality and sources of pollutants and, where practicable, to determine the relationship between disposal of pollutants on land and groundwater quality.

(c) In areas where a State or designated areawide planning agency determines that a groundwater pollution or contamination problem exists or may exist from the disposal of pollutants on land, or in subsurface excavations, the State or designated areawide planning agency, to support the establishment of controls or procedures to abate such pollution or contamination as identified in § 131.11 (j)–(l) of this Chapter, shall conduct (or the State shall require to be conducted by the disposing person), a monitoring survey or continuing program of monitoring to determine present or potential effects of such disposal, where such disposal is not prohibited. Groundwater monitoring conducted under this paragraph shall be coordinated with groundwater monitoring programs established pursuant to the Safe Drinking Water Act (Pub. L. 93–523).

§ 130.31 Relationship to municipal facilities program.

(a) Before awarding initial grant assistance for any project for any treatment works under section 201(g) of the

Act, where an applicable State water quality management plan, or relevant portion thereof, has been approved in accordance with this part and Part 131 of this Chapter, the Regional Administrator shall determine, pursuant to section 208(d) of the Act, that the applicant for such grant is the appropriate designated management agency approved by the Regional Administrator pursuant to § 130.15.

(b) Before approving a Step II or Step III grant for any project for any treatment works under section 201(g) of the Act, the Regional Administrator shall determine, pursuant to § 35.925–2 of this Chapter, that such works are in conformance with any applicable State water quality management plan or relevant portion thereof, approved by the Regional Administrator in accordance with this part and Part 131 of this Chapter.

(c) The Regional Administrator may elect not to approve a grant for any municipal treatment works under section 201(g) of the Act where an incomplete or a disapproved water quality management plan does not provide an adequate assessment of the needs and priorities for the area in which the project is located, consistent with the Act's planning requirements.

(d) The Regional Administrator and the State, through the agreement described in § 130.11, shall assure that planning under this part and Part 131 of this Chapter related to any municipal treatment works is accomplished in a timely manner, consistent with State priorities for construction of such municipal treatment works.

§ 130.32 Relationship to National Pollutant Discharge Elimination System.

(a) State participation in the National Pollutant Discharge Elimination System pursuant to section 402(b) of the Act shall not be approved for any State which does not have a continuing planning process approved by the Regional Administrator pursuant to § 130.41.

(b) Approval of State participation in the National Pollutant Discharge Elimination System pursuant to section 402 (b) of the Act may be withdrawn in accordance with the provisions of section 402(c)(3) of the Act and § 124.93 of this Chapter from any State if approval of the continuing planning process is withdrawn pursuant to § 130.42.

(c) No permit under section 402 of the Act shall be issued for any point source which is in conflict with a plan approved by the Regional Administrator in accordance with this part and Part 131 of this Chapter, provided however, that no such permit shall be deemed to be in conflict with any provision of such plan or portion thereof, hereafter approved, which relates specifically to the discharge for which the permit is proposed, unless the State has provided the owner or operator of the discharge and the interested public with notice and the opportunity to appeal such provision.

§ 130.33 Relationship of State and designated areawide planning programs.

(a) The State planning agency designated by the Governor pursuant to § 130.12(a) is responsible for assuring that the requirements of section 208 of the Act, this part, and Part 131 of this Chapter are achieved Statewide.

(NOTE: Where a designated areawide planning agency fails to achieve the requirements of section 208 of the Act, this part or Part 131 of this Chapter, the State planning agency is responsible for assuring that such requirements are achieved in the designated areawide planning area.)

(b) In order to assure that designated areawide planning agencies achieve the requirements specified in § 130.33(a) in a timely manner and that such agencies conduct planning that is consistent with planning developed by the State, the State planning agency designated pursuant to § 130.12(a) is expected to provide leadership and support to designated areawide planning agencies and to monitor progress of such agencies.

(c) Designated areawide planning under section 208 of the Act shall be incorporated in the water quality management plan for the State. The State planning agency shall provide the review and certification of such designated areawide planning pursuant to § 131.20(f) of this Chapter prior to formal incorporation into the State's water quality management plan.

§ 130.34 Relationship to other local, State, and Federal planning programs.

(a) The process shall assure that State water quality management plans are coordinated, and shall describe the relationship with plans for designated areawide planning areas within the State, with planning required in adjacent States under section 208 of the Act, with affected State, local, and Federal programs, and with other applicable resource and developmental planning including:

(1) State and local land use and development programs.

(2) Activities stemming from applicable Federal resource and developmental programs including:

(i) The Solid Waste Disposal Act, as amended (Pub. L. 91–512).

(ii) The Safe Drinking Water Act (Pub. L. 93–523).

(iii) The Clean Air Act, as amended (Pub. L. 91–604).

(iv) The Coastal Zone Management Act (Pub. L. 92–583).

(v) The Watershed Protection and Flood Protection Act (Pub. L. 83–566).

(vi) The Rural Development Act of 1972 (Pub. L. 92–419).

(vii) The Land and Water Conservation Fund Act, as amended (Pub. L. 88–578).

(viii) The National Historic Preservation Act (Pub. L. 89–665).

(ix) The Fish Restoration Act (Pub. L. 81–681) and the Federal Aid in Wildlife Restoration Act (Pub. L. 75–415).

(x) The Endangered Species Act (Pub. L. 93–205).

(xi) Wastewater Management Urban Studies Programs administered by the U.S. Army Corps of Engineers (Pub. L. 685, 1938, Pub. L. 429, 1913).

(xii) Transportation Planning administered by the Department of Transportation (Pub. L. 87–866, Pub. L. 93–366, Pub. L. 93–503).

(xiii) The Housing and Community Development Act of 1974 (Pub. L. 93–383).

(xiv) Other Federally assisted planning and management programs.

(b) Approved section 201 facilities plans are to be considered detailed portions of the water quality management plan(s) providing in-depth analysis of specific municipal and storm drainage related water quality problems. The State or areawide planning agency is responsible for assuring compatibility of 201 facilities planning with the State or areawide water quality management plan.

(c) In the event that a "Level B" study (as required under section 209 of the Act) is underway or has been completed, the State or designated areawide planning agency shall consider the following outputs of the study, and where appropriate, provide for integration of the outputs with the water quality management plan(s):

(1) Existing and projected future water withdrawals and consumptive demand over a 20-year period.

(2) Facilities and management measures to be undertaken to meet demands on the water supply program.

(3) The effects of the water supply program on water quality.

(4) Impact of authorized water development measures.

(5) Identification of proposed or designated wild and scenic stream reaches.

(6) Watershed management and land treatment measures.

(7) Energy development and production related factors.

(d) In the event that a "Level B" plan has not been initiated, the State or designated areawide planning agency shall identify the appropriate constraints on water quality management which would be brought about by:

(1) Current and projected future (20-year period) water demands.

(2) Designated and desired wild and scenic river segments.

(3) Energy development and production factors.

§ 130.35 Planning requirements for Federal properties, facilities or activities.

(a) Pursuant to section 313 of the Act and Presidential Executive Order Number 11752, Federal properties, facilities or activities are required to be in compliance with State, interstate, and local substantive requirements respecting control and abatement of pollution to the same extent that any person is subject to such requirements.

(b) Federal agencies shall cooperate and give support to State or designated areawide planning agencies in the formulation and implementation of water quality management plans relating to Federal properties, facilities or activities and land areas contiguous with Federally-owned lands.

(c) The Regional Administrator shall assist in coordination of substantive planning requirements for Federal properties, facilities or activities between the appropriate State and Federal agency (ies).

(d) Disputes or conflicts between Federal agencies and State, interstate, or local agencies in matters affecting the application of or compliance with an applicable requirement for control and abatement of pollution shall be mediated by EPA. In such cases, if attempted mediation is unsuccessful the matter will be referred to the Office of Management and Budget under provisions of Executive Order 11752.

Subpart E—State Planning Process Adoption, Approval and Revisions Procedures; Separability

§ 130.40 Adoption and submission of State process description.

(a) The description of the State continuing planning process developed pursuant to § 130.10(c) or revisions to the description of the State continuing planning process made pursuant to § 130.43 shall be adopted as the official continuing planning process of the State after appropriate public participation in accordance with section 101(e) of the Act and with Part 105 of this Chapter.

(b) The Governor shall submit the adopted State continuing planning process description to the Regional Administrator for approval. Subsequent revisions to the continuing planning process description, however, shall be submitted as a part of the State program submittal pursuant to § 35.555 of this Chapter.

(c) Submission shall be accomplished by delivering to the Regional Administrator the adopted planning process description, as specified in § 130.10(c) of this part, and a letter from the Governor notifying the Regional Administrator of such action.

§ 130.41 Review and approval or disapproval of State process.

(a) The Regional Administrator shall approve, conditionally approve, or disapprove, the State planning process description submitted pursuant to § 130.40 of this part within 30 days after the date of receipt, as follows:

(1) If the Regional Administrator determines that the State planning process conforms with the requirements of the Act and this part, he shall approve the process and so notify the Governor by letter.

(2) If the Regional Administrator determines that the State planning process fails to conform with the requirements of the Act and this part, he shall either conditionally approve or disapprove the process and so notify the Governor by letter and shall state:

(i) The specific revisions necessary to obtain approval of the process; and

(ii) The time period for resubmission of the revised process or portions thereof.

(b) The Regional Administrator shall not approve any State continuing planning process description which will not result in timely State water quality management plans that conform with the applicable requirements of the Act and Part 131 of this Chapter for all areas within the State.

§ 130.42 Withdrawal of approval of State process.

Substantial failure of any plan or plans prepared pursuant to the approved State planning process to conform with applicable requirements of this part and Part 131 of this Chapter, including gross failure to comply with the schedule for State water quality management plan preparation, may indicate that the planning process by which such plan or plans were developed was deficient and shall be revised. Failure to accomplish necessary revisions of the State planning process may result in withdrawal of approval of part or all of the process.

§ 130.43 Review and revisions of State process.

(a) The State shall review annually its continuing planning process and shall revise the process as may be necessary to assure the development and maintenance of a State strategy and State program for preventing and controlling water pollution, based on current State and areawide water quality management plans which will accomplish national water quality objectives in conformity with the requirements of the Act.

(b) In addition to any other necessary revisions identified by the State or the Regional Administrator, the Governor shall submit, within 150 days after these regulations become effective, whatever revisions to the planning process description are necessary to insure conformity with this part.

(c) Subsequent revisions to the planning process description shall be submitted by the State as a part of the State program submittal pursuant to § 35.555 of this Chapter.

§ 130.44 Separability.

If any provision of this part, or the application of any provision of this part to any person or circumstance, is held invalid, the application of such provision to other person or circumstance, and the remainder of this part, shall not be affected thereby.

[FR Doc 75-32012 Filed 11-26-75;8:45 am]

[FRL 461-5]

PART 131—PREPARATION OF WATER QUALITY MANAGEMENT PLANS

On July 16, 1975, notice was published in the FEDERAL REGISTER, 40 FR 29887, proposing amendments to the policies and procedures for the preparation of water quality management basin plans (40 CFR Part 131) pursuant to Section 303(e) of the Federal Water Pollution Control Act Amendments of 1972; Pub. L. 92-500, 86 Stat. 816 (1972); 33 U.S.C. 1251 et. seq. (hereinafter referred to as the Act). Part 130 of this Chapter has also been amended. The amendments are in accordance with a Court Order issued by Judge John Lewis Smith, Jr., in Natural Resources Defense Council, et. al. v. Train, et al., D.C. D.C. Civ. Act. No. 74-1485, which stipulates that Section 208 planning must be conducted by the States in all areas that are not designated in accordance with Section 208 (a) (2) through (4) of the Act.

Sections 303(e) and 208 of the Act require State and designated areawide planning agencies to have a continuing planning process which is consistent with the Act. State water quality management plans are to be prepared in accordance with the State's continuing planning process submitted and approved pursuant to Part 130 of this Chapter.

These amended regulations describe the requirements for preparation of water quality management plans and the procedures governing plan adoption, submission, revision, and EPA approval. These regulations now specifically include the provisions for the State as well as areawide water quality management planning responsibilities under Section 208 of the Act and are designed to assure that the plans prepared pursuant to this Part 131 will be appropriate for water quality management both in areas having complex water quality problems and in less complicated situations.

The primary objective of the water quality management plans will be to achieve the 1983 national water quality goal of the Act, where attainable. In those areas where the 1983 water quality goal may not be attainable, the plans shall identify the water quality goals to be achieved and, where necessary, provide appropriate information (such as wasteload allocation information) which may be relevant in making water quality related effluent limitation determinations pursuant to Section 302 of the Act.

The water quality management plan will serve as a management document which identifies the water quality problems of a particular basin or other approved planning areas and sets forth an effective management program to alleviate those problems and preserve water quality for all intended uses. Thus, development of the plans will involve an iterative process of establishing attainable water quality goals, identifying necessary controls and regulatory programs, and determining the resulting environmental, social, and economic impact.

EPA will prepare guidelines concerning the development of water quality management plans to assist the State and areawide planning agencies in carrying out the provisions of these regulations.

Written comments on the proposed rulemaking were invited and received from nearly 100 interested groups, including EPA Regional Offices, State and local governments, other Federal agencies, industrial organizations and special interest groups. In addition, verbal comments were also obtained from representatives of State and local government. All written comments are on file with the Agency. Most of these comments have been adopted or substantially satisfied by editorial changes, deletions from, or additions to these regulations. The majority of substantive comments centered around the issues discussed below.

1. Timing of Plan Preparation.

Many of the comments received indicated that the November 1, 1978 deadline for plan submission was unrealistic. This deadline has not been changed due to the above mentioned Court Order which imposed a time schedule requiring "final submission to EPA of complete Section 208 plans for nondesignated areas no later than November 1, 1978."

The final regulations require the States to submit initial plans for the entire State (including areawide plans developed by designated areawide planning agencies) to EPA for final approval no later than November 1, 1978. Although the final regulations no longer require the States to submit plans for pre-adoption review, the regulations make it clear that areawide plans must be submitted to the States for certification and the State, in turn, must submit the certified areawide plans to EPA for approval within two years from the date the areawide planning process is in operation (and no later than November 1, 1978). Pre-adoption review of areawide plans by the State is required; pre-adoption review of plans for the entire State by EPA is encouraged although not required in order to assure a minimal amount of conflict once the plans are formally adopted.

2. Nonpoint Source Controls.

Many of the comments received indicated that planning for the management of nonpoint sources of pollution will be the most difficult and complex water quality control problem confronting the State and areawide planning agencies due to insufficient funding, manpower and technology.

Taking these insufficiencies into account, EPA, in conjunction with a number of State representatives, has developed a strategy for management of nonpoint sources of pollution as part of the third edition of the "Water Quality Strategy Paper". This strategy for nonpoint source management has been incorporated into the final regulations.

As discussed above, these regulations are issued in response to an Order of the District Court for the District of Columbia, and contain a provision for plan submission no later than November 1, 1978, as required by the Order of the Court. Given the limited amount of time for the plans to be completed, and the consequent need for both State and areawide agencies to move forward quickly to adjust their planning processes to these regulations, good cause is hereby found for making these regulations effective upon publication.

In consideration of the foregoing, 40 CFR Part 131 is hereby amended by deleting the existing part and substituting a new Part 131 to read as follows.

Dated: November 21, 1975.

Russell E. Train,
Administrator.

Subpart A—Scope and Purpose; Definitions

Sec.
131.1 Scope and purpose.
131.2 Definitions.

Subpart B—Plan Content Requirements

131.10 General requirements.
131.11 Plan content.

Subpart C—Plan Adoption, Approval, and Revision Procedures; Separability

131.20 Adoption, certification, and submission of plans.
131.21 Review and approval or disapproval of plans.
131.22 Review and revision of plans.
131.23 Separability.

Authority: Secs. 106, 208, 303(d), 303(e), 305(b), 314, 501, 516(b) of the Federal Water Pollution Control Act, as amended; Pub. L. 92-500, 86 Stat. 816 (1972); (33 U.S.C. 1251 et seq.).

Subpart A—Scope and Purpose; Definitions

§ 131.1 Scope and purpose.

(a) This part establishes regulations specifying procedural and other requirements for the preparation of water quality management plans and the establishment of regulatory programs designed to achieve the goal specified in Section 101(a)(2) of the Act. The water quality management plans and implementing programs are to be prepared and established by State planning agencies pursuant to Sections 208 and 303(e) of the Act and by designated areawide planning agencies pursuant to Section 208 of the Act.

(b) These regulations describe the requirements for State and designated areawide planning agency planning and implementation under Section 208 of the Act; water quality management plans developed by State and designated areawide planning agencies pursuant to this part and the implementation of these plans must comply fully with the requirements of Section 208 of the Act.

(c) A water quality management plan is a management document which identifies the water quality problems of a particular approved State planning area or designated areawide planning area and sets forth an effective management program to alleviate those problems and to achieve and preserve water quality for all intended uses. The value of the water quality management plan lies in its utility in providing a basis for making sound water quality management decisions and in establishing and implementing effective control programs. To achieve this objective, the detail of the water quality management plan(s) should provide the necessary analysis and information for management decisions. Moreover, there must be a flexible revision mechanism to reflect changing conditions in the area of consideration. A water quality management plan should be a dynamic management tool, rather than a rigid, static compilation of data and material. In addition, the plan should be as concise as possible, thereby minimizing unnecessary paperwork.

(d) A water quality management plan will provide for orderly water quality management by:

(1) Identifying Problems: assessing existing water quality, applicable water quality standards, point and nonpoint sources of pollution, and identifying constraints on the plan.

(2) Assessing Needs/Establishing Priorities: assessing water quality and abatement needs, including coordination with ongoing construction grant award and NPDES programs, and establishing priorities, including consideration of existing construction grant and NPDES requirements.

(3) Scheduling Actions: setting forth compliance schedules considering all existing schedules issued pursuant to construction grant awards and NPDES permits, and target abatement dates indicating necessary Federal, State, and local actions.

(4) Defining Regulatory Programs: describing existing State/local regulatory programs and defining necessary additional regulatory programs designed to achieve water quality standards and goals.

(5) Defining Management Agency Responsibilities: identifying management agency(ies), including implementing, regulatory and operational agencies, and setting forth specific responsibilities to carry out required actions within the approved planning area and to assure that water quality objectives are made a part of the land management process.

(6) Coordinating Planning and Management: coordinating developmental planning and management related to water quality in order to attain the objectives of the Act.

§ 131.2 Definitions.

The definitions set forth in § 130.2 of this Chapter shall apply to this Part 131.

Subpart B—Plan Content Requirements

§ 131.10 General requirements.

(a) This subpart describes the required content of water quality management plans to be prepared for each approved State planning area included in the State planning process submitted and approved pursuant to § 130.41 of this Chapter and for each area designated pursuant to Section 208(a)(2), (3), or (4) of the Act. The primary objective of the water quality management plans shall be to define the programs necessary to achieve the 1983 national water quality goal established in Section 101(a)(2) of the Act. The plans shall identify the controls, regulatory programs, and management agencies necessary to attain the water quality goals and the established State water quality standards.

(b) Water quality management plans shall be prepared for all areas and waters of the State. Generally, water quality management planning elements will be the same throughout each State and designated areawide planning area. However, the level of detail required will vary according to the water quality problems (ranging from intensive planning in areas designated pursuant to Section 208(a)(2), (3), or (4) of the Act and in other areas with similar water quality problems, to essentially no planning in those areas where the State certifies that certain types of planning and implementation will not be undertaken pursuant to § 130.11(b) of this Chapter) and shall be established in the agreement between the State and the Regional Administrator (see § 130.11 of this Chapter) or in the work plan developed by the designated areawide agencies (see § 35.22u of this Chapter).

(c) The water quality management plans shall contain the information and analyses necessary for making sound water quality management decisions and for establishing and implementing effective control programs. Supportive data and calculations need not be included in the plans, but shall be made available to the Regional Administrator and the public upon request.

(d) Initial water quality management plans, or portions thereof, and subsequent refinements shall be prepared pursuant to the approved continuing planning process and submitted to the Regional Administrator in accordance with the State/EPA agreement described in § 130.11 of this Chapter or the work plan for designated areawide planning areas described in § 35.220 of this Chapter.

(e) Each water quality management plan shall incorporate appropriate information concerning other local, State and Federal planning as required under § 130.34 of this Chapter.

(f) Each water quality management plan shall include, where appropriate, a delineation of the relative priority of actions to be taken toward prevention and control of water pollution problems. Such priorities shall reflect the coordination of water quality management plans with other related planning programs including those identified in § 130.33 and § 130.34 of this Chapter.

(g) Water quality management planning elements shall include, but are not limited to:

(1) Planning boundaries (§ 131.11(a)).

(2) Water quality assessment and segment classification (§ 131.11(b)).

(3) Inventories and projections (§ 131.11(c)).

(4) Nonpoint source assessment (§ 131.11(d)).

(5) Water quality standards (§ 131.11(e)).

(6) Total maximum daily loads (§ 131.11(f)) [1].

(7) Point source load allocations (§ 131.11(g)) [1].

(8) Municipal waste treatment systems needs (§ 131.11(h)).

(9) Industrial waste treatment systems needs (§ 131.11(i)).

(10) Nonpoint source control needs (§ 131.11(j)).

(11) Residual waste control needs; land disposal needs (§ 131.11(k)).

(12) Urban and industrial stormwater needs (§ 131.11(l)).

(13) Target abatement dates (§ 131.11(m)).

(14) Regulatory programs (§ 131.11(n)).

(15) Management agencies (§ 131.11(o)).

(16) Environmental, social, economic impact (§ 131.11(p)).

Except as otherwise provided in Part 131.11.

§ 131.11 Plan content.

Recognizing that the level of detail may vary according to the water quality problems, the following elements shall be included in each water quality management plan unless a certification pursuant to § 130.11(b) of this Chapter provides otherwise:

(a) *Planning boundaries.* A delineation, on a map of appropriate scale, of the following: (1) The approved State planning areas included in the State planning process submitted and approved pursuant to § 130.41 of this Chapter and areawide planning areas designated pursuant to § 130.13 of this Chapter.

(2) Those areas in which facilities planning has been deemed necessary by the State pursuant to § 35.917-2 of this Chapter.

(3) The location of each water quality and effluent limitation segment identified in § 131.11(b)(2).

(4) The location of each significant discharger identified in § 131.11(c).

(5) The location of fixed monitoring stations.

(NOTE: Such monitoring station locations may be omitted if such locations are available in the EPA water quality information system).

(b) *Water quality assessment and segment classifications.* (1) An assessment of existing and potential water quality problems within the approved planning area or designated areawide planning area, including an identification of the types and degree of problems and the sources of pollutants (both point and nonpoint sources) contributing to the problems. The results of this assessment should be reflected in the State's report required under Section 305(b) of the Act.

(2) The classification of each segment as either water quality or effluent limitation as defined in § 130.2(o) of this Chapter.

(i) Segments shall include the surrounding land areas that contribute or may contribute to alterations in the physical, chemical, or biological characteristics of the surface waters.

(ii) Water quality problems generally shall be described in terms of existing or potential violations of water quality standards.

(iii) Each water quality segment classification shall include the specific water quality parameters requiring consideration in the total maximum daily load allocation process.

(iv) In the segment classification process, upstream sources that contribute or may contribute to such alterations should be considered when identifying boundaries of each segment.

(v) The classification of segments shall be based on measurements of instream water quality, where available.

(c) *Inventories and projections.* (1) An inventory of municipal and industrial sources of pollutants and a ranking of municipal sources which shall be used by the State in the development of the annual State strategy described in § 130.20 of this Chapter and the "project priority list" described in § 35.915(c) of this Chapter. The inventory shall include a description, by parameter, of the major waste discharge characteristics of each significant discharger of pollutants based on data from the National Pollutant Discharge Elimination System and the associated compliance monitoring systems, whenever available.

(2) A summary of existing land use patterns.

(3) Demographic and economic growth projections for at least a 20-year planning period disaggregated to the level of detail necessary to identify potential water quality problems.

(4) Projected municipal and industrial wasteloads based on § 131.11(c) (1) and (3).

(5) Projected land use patterns based on § 131.11(c) (2) and (3).

(d) *Nonpoint source assessment.* An assessment of water quality problems caused by nonpoint sources of pollutants.

(1) The assessment shall include a description of the type of problem, an identification of the waters affected (by segment or other appropriate planning area), an evaluation of the seriousness of the effects on those waters, and an identification of nonpoint sources (by category as defined in § 131.11(j)) contributing to the problem.

(2) Any nonpoint sources of pollutants originating outside a segment which materially affect water quality within the segment shall be considered.

(3) The results of this assessment should be reflected in the States' report required under Section 305(b) of the Act.

(e) *Water quality standards.* The applicable water quality standards, including the Statewide antidegradation policy, established pursuant to Section 303(a), (b), and (c) of the Act and any plans for the revision of such water quality standards.

(f) *Total maximum daily loads.* (1) For each water quality segment, or appropriate portion thereof, the total allowable maximum daily load of relevant pollutants during critical flow conditions for each specific water quality criterion being violated or expected to be violated.

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[1] Not necessary in effluent limitation segments.

(i) Such total maximum daily loads shall be established at levels necessary to achieve compliance with applicable water quality standards.

(ii) Such loads shall take into account:

(A) Provision for seasonal variation; and

(B) Provision of a margin of safety which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality.

(2) For each water quality segment where thermal water quality criteria are being violated or expected to be violated, the total daily thermal load during critical flow conditions allowable in each segment.

(i) Such loads shall be established at a level necessary to assure the protection and propagation of a balanced, indigenous population of fish, shellfish, and wildlife.

(ii) Such loans shall take into account:

(A) Normal water temperature;

(B) Flow rates;

(C) Seasonal variations;

(D) Existing sources of heat input; and

(E) The dissipative capacity of the waters within the identified segment.

(iii) Each estimate shall include an estimate of the maximum heat input that can be made into the waters of each segment where temperature is one of the criteria being violated or expected to be violated and shall include a margin of safety which takes into account lack of knowledge concerning the development of thermal water quality criteria for protection and propagation of fish, shellfish and wildlife in the waters of the identified segments.

(3) For each water quality segment, a total allocation for point sources of pollutants and a gross allotment for nonpoint sources of pollutants.

(i) A specific allowance for growth shall be included in the allocation for point sources and the gross allotment for nonpoint sources.

(ii) The total of the allocation for point sources and the gross allotment for nonpoint sources shall not exceed the total maximum daily load.

(4) Where predictive mathematical models are used in the determination of total maximum daily loads, an identification and brief description of the model, and the specific use of the model.

(NOTE: Total maximum daily loads shall not be determined by designated areawide planning agencies except where the State has delegated such responsibility to the designated agency. In those cases where the responsibility has not been delegated, the State shall determine total maximum daily loads for the designated areawide planning area).

(5) No point source load allocation developed pursuant to this section shall be less stringent than effluent limitations standards, or prohibitions required to be established pursuant to Sections 301, 302, 304, 306, 307, 311, and 316 of the Act.

(g) *Point source load allocations.* (1) For each water quality segment, the individual load allocation for point sources of pollutants, including thermal load allocations, for the next five-year period of the plan.

(NOTE: In those segments where water quality standards are established at levels less stringent than necessary to achieve the 1983 water quality goals specified in Section 101(a)(2) of the Act, the Regional Administrator may request the State to provide appropriate information, such as wasteload allocation information which may be relevant in making water quality related effluent limitation determinations pursuant to Section 302 of the Act).

(2) The total of such pollutant load allocations or effluent limitations for all individual point sources in the water quality segment shall not exceed the total allocation for the five-year period for all point sources of pollutants for each segment determined pursuant to § 131.11(f)(3).

(3) Each pollutant load allocation established pursuant to this paragraph shall incorporate an allowance for anticipated economic and population growth over at least a five-year period and an additional allowance reflecting the precision and validity of the method used in determining such allowance.

(4) Establishment of pollutant load allocations shall be coordinated with the development of terms and conditions of permits under the National Pollutant Discharge Elimination System and with any hearings pursuant to Section 302 and 316(a) of the Act relating to a source discharging to or otherwise affecting the segment.

(NOTE: Point source load allocations shall not be determined by designated areawide planning agencies except where the State has delegated such responsibility to the designated agency. In those cases where the responsibility has not been delegated, the State shall determine point source load allocations for the designated areawide planning area).

(h) *Municipal waste treatment systems needs.* (1) The municipal wastewater collection and treatment system needs by 5-year increments, over at least a 20-year period including an analysis of alternative waste treatment systems, requirements for and general availability of land for waste treatment facilities and land treatment and disposal systems, total capital funding required for construction, and a program to provide the necessary financial arrangements for the development of such systems.

(2) The identification of municipal waste treatment systems needs shall take into consideration:

(i) Load reductions needed to be achieved by each waste treatment system in order to attain and maintain applicable water quality standards and effluent limitations.

(ii) Population or population equivalents to be served, including forecasted growth or decline of such population over at least a 20-year period following the scheduled date for installation of the needed facility.

(iii) The results of preliminary and completed planning conducted under Step I and Step II grants pursuant to Title II of the Act.

(NOTE: In the absence of the Title II planning described above, the State is expected to develop the necessary estimates and analyses required under § 131.11(h)(1)).

(i) *Industrial waste treatment systems needs.* (1) The anticipated industrial point source wasteload reductions required to attain and maintain applicable water quality standards and effluent limitations for at least a 20-year planning period (in 5-year increments).

(2) Any alternative considerations for industrial sources connected to municipal systems should be reflected in the alternative considerations for such municipal watse treatment system.

(j) *Nonpoint source control needs.* (1) For each category of nonpoint sources of pollutants to be considered in any specified area as established in the State/EPA agreement (see § 130.11 of this Chapter), an identification and evaluation of all measures necessary to produce the desired level of control through application of best management practices (recognizing that the application of best management practices may vary from area to area depending upon the extent of water quality problems).

(2) The evaluation shall include an assessment of nonpoint source control measures applied thus far, the period of time required to achieve the desired control (see § 131.11(m)), the proposed regulatory programs to achieve the controls (see § 131.11(n)), the management agencies needed to achieve the controls (see § 131.11(o)), and the costs by agency and activity, presented by 5-year increments, to achieve the desired controls, and a description of the proposed actions necessary to achieve such controls.

(3) The nonpoint source categories shall include: (i) Agriculturally related nonpoint sources of pollution including runoff from manure disposal areas, and from land used for livestock and crop production;

(ii) Silviculturally related nonpoint sources of pollution;

(iii) Mine-related sources of pollution including new, current and abandoned surface and underground mine runoff;

(iv) Construction activity related sources of pollution;

(v) Sources of pollution from disposal on land in wells or in subsurface excavations that affect ground and surface water quality;

(vi) Salt water intrustion into rivers, lakes, estuaries and groundwater resulting from reduction of fresh water flow from any cause, including irrigation, obstruction, groundwater extraction, and diversion; and

(vii) Sources of pollution related to hydrologic modifications, including those caused by changes in the movement, flow, or circulation of any navigable waters or groundwaters due to construction and operation of dams, levees, channels, or flow diversion facilities.

(NOTE: Nonpoint source control needs need not be determined by designated areawide planning agencies where the Governor has determined pursuant to Section 208(b)(4) of the Act that the State will develop nonpoint source control requirements on a Statewide basis.)

(k) *Residual waste control needs; land disposal needs.* (1) An identification of the necessary controls to be established over the disposition of residual wastes which could affect water quality and a description of the proposed actions necessary to achieve such controls.

(2) An identification of the necessary controls to be established over the disposal of pollutants on land or in subsurface excavations to protect ground and surface water quality and a description of the proposed actions necessary to achieve such controls.

(*Note*: Residual waste control needs need not be determined by designated areawide planning agencies where the Governor has determined pursuant to Section 208(b)(4) of the Act that the State will develop residual waste control requirements pursuant to Section 208(b)(2) (J) and (K) on a Statewide basis.)

(l) *Urban and industrial stormwater systems needs.* (1) An identification of the required improvements to existing urban and industrial stormwater systems, including combined sewer overflows, that are necessary to attain and maintain applicable water quality standards.

(2) An identification of the needed urban and industrial stormwater systems for areas not presently served over at least a 20-year planning period (in 5-year increments) that are necessary to attain and maintain applicable water quality standards, emphasizing appropriate land management and other nonstructual techniques for control of urban and industrial stormwater runoff.

(3) A cost estimate for the needs identified in (1) and (2) above, the reduction in capital construction costs brought about by nonstructural control measures, and any capital and annual operating costs of such facilities and practices.

(m) *Target abatement dates.* Target abatement dates or schedules of compliance for all significant dischargers, nonpoint source control measures, residual and land disposal controls, and stormwater system needs, including major interim and final completion dates, and requirements that are necessary to assure an adequate tracking of progress toward compliance.

(n) *Regulatory programs.* (1) A description of existing State/local regulatory programs which are being or will be utilized to implement the State water quality management plan. The description shall include the regulatory approach to be employed, the statutory basis for the program, and relevant administrative and financial program aspects.

(2) A description of necessary additional State/local regulatory programs to be established in order to implement the State water quality management plan. The description shall include the proposed regulatory approach, the necessary legislation, and anticipated administrative and financial capabilities.

(3) The regulatory programs described in § 131.11(n) (1) and (2) should generally take full advantage of existing legislative authorities and administrative capabilities. However, such programs shall assure that:

(i) To the extent practicable, waste treatment management including point and nonpoint source management shall be on a Statewide and/or an areawide basis and provide for the control or abatement of all sources of pollution including inplace or accumulated deposits of pollutants;

(ii) The location, modification and construction of any facilities, activities, or substantive changes in use of the lands within the approved planning area, which might result in any new or deleterious discharge directly or indirectly into navigable waters are regulated; and

(iii) Any industrial or commercial wastes discharged into any publicly owned treatment works meet applicable pretreatment requirements.

(o) *Management agencies.* (1) The identification of those agencies recommended for designation by the Governor pursuant to § 130.15 of this Chapter to carry out each of the provisions of the water quality management plan. The identification shall include those agencies necessary to construct, operate and maintain all treatment works identified in the plan and those agencies necessary to implement the regulatory programs described in § 131.11(n).

(2) Depending upon an agency's assigned responsibilities under the plan, the agency must have adequate authority and capability:

(i) To carry out its assigned portions of an approved State water quality management plan(s) (including the plans developed for areawide planning areas designated pursuant to Section 208(a) (2), (3), or (4) of the Act) developed under this part;

(ii) To effectively manage waste treatment works and related point and nonpoint source facilities and practices serving such area in conformance with the approved plan;

(iii) Directly or by contract, to design and construct new works, and to operate and maintain new and existing works as required by any approved water quality management plan developed under this part;

(iv) To accept and utilize grants or other funds from any source for waste treatment management or nonpoint source control purposes;

(v) To raise revenues, including the assessment of user charges;

(vi) To incur short and long term indebtedness;

(vii) To assure, in implementation of an approved water quality management plan, that each participating community pays its proportionate share of related costs;

(viii) To refuse to receive any wastes from a municipality or subdivision thereof, which does not comply with any provision of an approved water quality management plan applicable to such areas; and

(ix) To accept for treatment indust wastes.

(p) *Environmental, social, economic impact.* An assessment of the environmental, social, and economic impact of carrying out the plan.

Subpart C—Plan Adoption, Approval, and Revision Procedures; Separability

§ 131.20 Adoption, certification, and submission of plans.

(a) During development and prior to formal adoption, the State and designated areawide water quality management plans or portions thereof, shall be the subject of appropriate public participation in accordance with Section 101(e) of the Act and with Part 105 of this Chapter requiring public participation in all phases of the water quality management plan development.

(1) The goal of the public participation is to involve the public in the formulation of the plan, including the determination of the planning goals, and to develop public support that will ultimately lead to acceptance and implementation of the plan.

(Note: Beyond continuing participation in the development of the plan, a more structured opportunity for public meetings or hearings should be provided at key points in the process.)

(2) State and designated areawide planning agencies may delegate public participation activities to appropria governmental units within the planni area.

(b) Designated areawide planning agencies shall submit areawide water quality management plans, for review and recommendations to the Governor, or his designee, and to chief elected officials of local units of government that have responsibility for or are directly affected by the plan prior to formal submission of the plan for the Governor's certifications pursuant to § 131.120(f).

(1) The Governor, or his designee, shall provide for timely review and comment in order to minimize potential objections once the plan is formally submitted to the Governor for the certifications. Concurrence with a designated areawide water quality management plan at the time of the review by the Governor, or his designee, will not substitute for formal certifications by the Governor pursuant to § 131.20(f) after the plan has been the subject of further public participation.

(2) In the event that a local unit of government fails to provide a recommendation within 30 days of receipt of the plan for review and comment prior to formal submission to the Governor, or his designee, a favorable recommendation on adoption of the plan shall be assumed.

(c) The State planning agency shall submit State water quality management plans for review and recommendations, to appropriate chief elected officials of local units of government that have responsibility for or are directly affected by the plan prior to formal adoption of the plan by the State pursuant to § 131.20(h).

(d) The State is encouraged (although not required) to submit the water quality management plan(s) for State and designated areawide planning areas to the Regional Administrator for review prior to formally adopting the plan(s). The Regional Administrator shall provide for timely review and comment in order to minimize potential objections once the plan is formally adopted by the State pursuant to § 131.20(h). Concurrence with a water quality management plan at the time of any pre-adoption review will not substitute for approval by the Regional Administrator pursuant to § 131.21 after the plan has been the subject of further public participation and formally adopted by the State.

(e) After comments and recommendations are received from the Governor, or his designee, and from chief elected officials of local units of government pursuant to §131.20(b), designated areawide planning agencies shall submit the areawide water quality management plans, or portions thereof, to the Governor, or his designee for final review and formal adoption and certification.

(f) The Governor, or his designee, shall review areawide water quality management plans, or portions thereof, submitted by designated areawide planning agencies.

(1) The Governor shall certify that the State has reviewed the plan and:

(i) Has found the plan to be in conformance with the provisions of the approved planning process for the State, including State water quality management plans prepared pursuant to the process, and that the plan will be accepted as a detailed portion of the water quality management plans of the State;

(ii) Has found the plan to be consistent with the water quality management needs of the area;

(iii) Has found the plan to be in conformance with all State and local legislation, regulations, or other requirements or plans regarding land use and protection of the environment, except for those cases where the plan specifically recommends changing such legislation, regulations, or other appropriate requirements;

(iv) Has found that the plan provides adequate basis for selection of management agencies to be designated pursuant to § 130.15(a) of this Chapter and Section 208(c) of the Act; and

(v) Has adopted the plan as the State's official water quality management plan for the designated areawide planning area pursuant to § 131.20(h).

(2) The procedures set forth in § 131.20 (f)(1) shall be followed by intrastate and interstate designated areawide planning agencies, except where the plan has been developed by an interstate agency, the plan shall be submitted to the Governor, or his designee, of the State which includes the largest portion of the designated area's population. The Governor, or his designee, shall coordinate the plan review and certification process with all other affected States.

(g) If the Governor determines that the water quality management plan for the designated areawide planning area fails to conform with the requirements of the Act, this part, or the approved work plan of the designated areawide planning agency is not consistent with contiguous water quality management plans including those of neighboring States, he shall either conditionally certify or not certify the plan and so notify the Regional Adminstrator and the designated areawide planning agency by letter and shall state:

(1) The specific revisions necessary to obtain full certification of the water quality management plan; and

(2) The time period for submission of necessary revisions to the water quality management plan or portions thereof.

(h) Each State and areawide water quality management plan, or portion thereof, shall be adopted as the official water quality management plan(s) of the State. Each adopted water quality management plan shall include assurances and a certification by the Governor that the plan is the official water quality management plan for the area covered by such plan, that the plan will be implemented and used for establishing permit conditions, nonpoint source controls, schedules of compliance and priorities for awarding grants for construction of municipal treatment works pursuant to Section 201(g) of the Act, and that the plan meets all applicable requirements of the Act, this part, and Part 130 of this Chapter.

(i) The Governor shall submit adopted water quality management plans to the Regional Administrator, together with a summary of public participation in the development and adoption of the plan (required by Section 101(e) of the Act and Part 105 of this Chapter) and a letter from the Governor notifying the Regional Administrator of such action. Such plans shall be submitted in accordance with the following schedule:

(1) Water quality management plans for the entire State shall be submitted to the Regional Administrator no later than November 1, 1978.

(2) Water quality management plans for designated areawide planning areas shall be submitted no later than two years from the date that the planning process is in operation (pursuant to § 35.222-1 of this Chapter) and no later than November 1, 1978.

(j) Portions of the plan (interim outputs), developed in accordance with the requirements of Parts 130 and 131 may be adopted, certified, and submitted during the development of the plan and approved in the same manner as a plan under § 131.21.

(k) At the time of submission, the Governor shall identify those modifications, if any, that need to be made, as a result of the plan, to the agreement between EPA and a State under Part 134 of this Chapter.

§ 131.21 Review and approval or disapproval of plans.

The Regional Administrator shall approve, conditionally approve or disapprove the water quality management plan, or portion thereof, submitted pursuant to § 131.20(i) or (j) within 120 days after the date of receipt, as follows:

(a) If the Regional Administrator determines that the water quality management plan conforms with the requirements of the Act, this part, and the approved continuing planning process (including compliance with any State/EPA agreement or designated areawide planning agency work plans) and is consistent with contiguous water quality management plans, including those of neighboring States, he shall approve the plan and so notify the Governor or his designee by letter.

(b) If the Regional Administrator determines that the water quality management plan fails to conform with the requirements of the Act, this part, or the approved continuing planning process (including compliance with any State/EPA agreements or designated areawide planning agency work plans) or is not consistent with contiguous water quality management plans including those of neighboring States, he shall either conditionally approve or disapprove the plan and so notify the Governor or his designee by letter and shall state:

(1) The specific revisions necessary to obtain full approval of the water quality management plan; and

(2) The time period for submission of necessary revisions to the water quality management plan or portions thereof.

(c) Where water quality management plans involving interstate waters are found to be inconsistent, the Regional Administrator shall notify the Governor of each concerned State of the specific areas of inconsistency and the specific revision(s) necessary to eliminate such inconsistency.

§ 131.22 Review and revision of plans.

(a) As a minimum, the State or designated areawide planning agency shall review, and if necessary revise, each water quality management plan at least annually. The Regional Administrator may request specific plan revisions. The water quality management plan shall be revised such that it remains a meaningful and current water quality management document.

(b) Minor revisions, particularly those which incorporate updated information but do not involve substantive change, may be submitted directly to the Regional Administrator by the State planning agency designated under § 130.10 (c) (6) of this Chapter.

(Note: Minor revisions to plans for designated areawide planning areas shall be submitted to the State planning agency, which in turn shall incorporate such revisions in the Statewide plan and notify the Regional Administrator of the revisions).

(c) Changes to the water quality management plan(s) which result from a determination by the Administrator or the State, as appropriate, pursuant to Sections 301(c), 302, or 316 of the Act, an amendment to the Act, or an adjudicatory or judicial proceeding, shall be incorporated into a revised plan. Such revisions need not be subject to formal public participation, adoption, certification and submission, unless the Regional Administrator determines that the revision is of a substantive nature.

(d) Revisions of a substantive nature shall be subject to formal public participation, certification, adoption, and submission as well as review and approval procedures described in § 131.20 and § 131.21. The Regional Administrator may waive requirements for public participation and other formal revision procedures where he determines that such requirements have been met as a result of other proceedings conducted pursuant to the Act and other EPA regulations.

§ 131.23 Separability.

If any provision of this part, or the application of any provision of this part to any person or circumstance, is held invalid, the application of such provision to other persons or circumstances, and the remainder of this part, shall not be affected thereby.

[FR Doc.75-32013 Filed 11-26-75;8:45 am]

Title 40—Protection of the Environment

CHAPTER I—ENVIRONMENTAL PROTECTION AGENCY

SUBCHAPTER B—GRANTS AND OTHER FEDERAL ASSISTANCE

[FRL 461-6]

PART 35—STATE AND LOCAL ASSISTANCE

Grants to State and Designated Areawide Planning Agencies—Conditions, Policies and Procedures

On September 8, 1975, notice was published in the FEDERAL REGISTER, 40 FR 41644, that the Environmental Protection Agency was proposing to amend the interim 208 grant regulations (40 CFR Part 35, Subpart F) and to publish final regulations setting forth procedures for providing grants to State as well as areawide planning agencies approved pursuant to 40 CFR 130.12 and 130.13 respectively, for the development of a planning process and a section 208 plan for water quality management.

Section 208 of the Federal Water Pollution Control Act Amendments of 1972 is designed to encourage and facilitate the development and implementation of areawide water quality management plans. The law requires the Governor of each State to designate eligible areawide planning agencies to perform intensive areawide planning for those geographic areas of the State which meet the criteria set forth in Part 130.13 of this Chapter. The State is required to undertake the planning for remaining geographic areas. In accordance with a Court Order issued by Judge John Lewis Smith, Jr. in Natural Resources Defense Council, et al. v. Train, et al., D.C. D.C. Civ. Act. No. 74-1486, grants are authorized for State as well as areawide planning agencies.

Since section 208 planning must be done on a nationwide basis for all surface areas of the United States by either areawide or State planning agencies pursuant to 40 CFR Part 130, it is important to have compatible planning requirements for section 208 planning conducted by both areawide and State planning agencies. Hence, the substantive planning requirements have been deleted from the 208 grant regulations (40 CFR Part 35, Subpart A) and placed in the following regulations to be published in the FEDERAL REGISTER concurrently with the 208 grant regulations: *Policies and Procedures for the Continuing Planning Process* (40 CFR Part 130) and *Preparation of Water Quality Management Plans* (40 CFR Part 131). As a result, the 208 grant regulations are solely procedural, referencing the appropriate portions of 40 CFR Parts 130 and 131 for the substantive planning requirements.

Written comments on the proposed rulemaking were invited and received from numerous interested parties. In addition, verbal comments were also obtained from representatives of State and local government. EPA has carefully considered all submitted comments. All written comments are on file with the Agency. Many of these comments have been adopted or substantially satisfied by editorial change, deletions from, or additions to the regulations. The majority of the substantive comments centered around the three issues discussed below.

1. Allocation of Funds. Numerous methods for allocating funds to State and designated areawide planning agencies were considered including: (a) A nationally derived formula based on point and nonpoint source pollution problems; (b) a formula based on the population of each State within a Region; (c) a formula based on the population of each State within a Region minus the population of previously funded designated planning areas; and (d) a formula based on a combination of the population and land area of each State within a Region minus the population and land area of previously funded designated areas.

Many of the commentors indicated that they did not think that an accurate nationally derived formula based on point and nonpoint source pollution problems could be derived and that they would prefer a formula based on population. The regulations, therefore, contain a formula based on a combination of population and land area. This combination was selected because State and areawide water quality management planning must consider both point and nonpoint source problems and many nonpoint source problems are associated with large land masses and not necessarily with large concentrations of population.

2. Requirement for a Financially Self-Sustaining Planning Process. Many of the comments that were received opposed this requirement, stating that it was impractical to expect the planning agencies to obtain funds from other sources to pay for the required continuing planning, including the annual plan update. The self-sustaining provision, however, has been retained since Federal funding is presently envisioned for only development of the initial plan. The substantial Federal investment is intended to spur continuing planning over the long-term.

3. Establishment of a State Management Role in Areawide Planning Areas. The above mentioned Court Orderstipulates that the State is responsible for assuring that the provisions of section 208 of the Federal Water Pollution Control Act Amendments of 1972 are implemented in areawide as well as State planning areas. Many of the comments that were received stated that in order for the States to carry out their responsibilities, it was imperative to provide for a strong State management role in areawide planning areas. These regulations have therefore been revised to clarify previous policy regarding the State management role. The areawide planning agencies are required to obtain State review and comment on their grant applications, work plans and any substantial revisions thereto and interim progress reports. The areawide planning agencies are also required to provide the State with a copy of their plan for pre-adoption review to minimize any conflicts that might arise at the time of formal plan submittal.

As discussed above, these regulations are issued in response to an Order of the District Court for the District of Columbia, and contain a provision for plan submission no later that November 1, 1978, as required by the Order of the Court. Given the limited amount of time for the plans to be completed, and the consequent need for both State and areawide agencies to move forward quickly to adjust their planning processes to these regulations, good cause is hereby found for making these regulations effective November 28, 1975.

In consideration of the foregoing, 40 CFR Part 35 is hereby amended by deleting Subpart F and substituting the following for Subpart A, §§ 35.200 through 35.240.

Dated: November 21, 1975.

Russell E. Train,
Administrator.

Subpart A—Planning Grants

Grants to State and Designated Areawide Planning Agencies—Conditions, Policies and Procedures

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Subpart A—Planning Grants

Grants to State and Designated Areawide Planning Agencies—Conditions, Policies and Procedures

§ 35.200 Purpose.

These provisions establish conditions, policies and procedures for grants to State and areawide planning agencies, and reference requirements for the substance of the planning process and the content of required plans. These provisions supplement the EPA general grant regulations and procedures set forth in Part 30 of this Chapter.

§ 35.202 Definitions.

The definitions of the terms contained in § 130.2 of this Chapter shall be used herein except as the context otherwise requires.

§ 35.204 Allocations of funds.

(a) The Administrator will establish a Regional allotment ratio for each EPA Region in accordance with the following formula:

$$= \frac{1}{2}\left[\frac{\text{(Population of Region)} - \text{(Population of Region's Previously Funded Designated Planning Areas)}}{\text{(Population of United States and Territories)} - \text{(Population of Previously Funded Designated Planning Areas Nationally)}}\right]$$

$$+ \frac{1}{2}\left[\frac{\text{(Land Area of Region)} - \text{(Land Area of Region's Previously Funded Designated Planning Areas)}}{\text{(Land Area of United States and Territories)} - \text{(Land Area of Previously Funded Designated Planning Areas Nationally)}}\right]$$

(b) The Regional allotment ratio for each Region established pursuant to § 35.204(a) will be applied to sums available for each fiscal year after June 30, 1975 to produce an allotment for each Region.

(c) As soon as practicable after the President's budget has been submitted to the Congress, the Administrator will issue to each Regional Administrator a tentative Regional allowance (planning target) based on the amount of the appropriation requested by the President. The Regional Administrator shall notify each State and appropriate areawide planning agency of the funds available for State and areawide water quality management planning as soon as practicable after receipt.

(d) As soon as practicable after funds are appropriated, the Administrator will issue to each Regional Administrator a final Regional allowance for allotment to State and appropriate areawide planning agencies in each Region. Within the limits of each final Regional allowance, the Regional Administrator shall negotiate grant amounts for each eligible applicant (State and areawide planning agencies) within the Region.

(e) On June 1, 1976, all unobligated funds remaining within a Region will revert back to the Administrator for reallocation to other Regions (for subsequent reallocation to State and areawide planning agencies) which can demonstrate a need for funds in excess of their final Regional allowance. In Fiscal Year 1977 and in subsequent fiscal years, unobligated Regional funds will revert back to the Administrator ninety days after the date the final Regional allowance is issued to the Regional Administrator pursuant to § 35.204(d), or not later than thirty days prior to the end of the fiscal year, whichever date is earlier.

§ 35.206 Eligibility for grant award.

(a) *Areawide planning agency.* Areawide planning agencies shall be eligible for grant award pursuant to these provions only if designated pursuant to § 130.13 of this Chapter and approved by the Administrator as the official areawide planning agency for the area. The agency shall further agree to develop a plan and a continuing planning process for the entire area that meets the requirements of these provisions and Parts 130 and 131 of this Chapter.

(b) State planning agency. State agencies designated by the Governors pursuant to § 130.12 of this Chapter and approved by the appropriate Regional Administrator shall be eligible for grant award pursuant to these provisions, provided that the State continuing planning process has been approved by the appropriate Regional Administrator pursuant to § 130.41 of this Chapter.

§ 35.208 Application for grant.

§ 35.208–1 Preapplication requirements.

(a) All agencies applying for section 208 planning grants shall comply with all applicable requirements of Office of Management and Budget (OMB) Circular No. A–95, pursuant to § 30.303 of this Chapter.

(b) Areawide planning agencies designated by the Governor(s) pursuant to § 130.13 of this Chapter shall submit their applications and supporting data to the State planning agency designated pursuant to § 130.12 of this Chapter. Interstate areawide planning agencies shall submit the application to the designated State agency in the State which includes the greatest portion of the area's population, and provide copies to the Governors of other affected states.

§ 35.208–2 Application requirements.

(a) Each agency applying for section 208 planning grants shall meet the following application requirements:

(1) Applications shall be made to EPA on such forms as the Administrator may prescribe pursuant to § 30.315 of this Chapter.

(2) Evidence shall be provided that all requirements of OMB Circular No. A-95 have been met.

(3) A statement shall be provided indicating that provisions have been made or will be made for the establishment of the following appropriate advisory groups:

(i) For State planning areas, a policy advisory committee for each approved planning area; the membership and role of this committee shall be consistent with § 130.16(c) of this Chapter;

(ii) For areawide planning areas, a policy advisory committee whose membership shall be consistent with § 130.16 (d) of this Chapter.

(4) A statement shall be provided that the proposed activity takes into account the relationship with affected State, local and Federal programs, and with other applicable resource and developmental planning programs as set forth in § 130.34(a) of this Chapter.

(5) A statement shall be included indicating that the planning process will become financially self-sustaining and provide for annual update of the plan once the initial plan is developed and approved.

(6) An outline of the work plan which the applicant will submit pursuant to § 35.220 herein shall be provided by State and designated areawide planning agencies.

(7) A statement indicating how matching funds, if required, will be provided.

(b) Areawide planning agencies designated by the Governor(s) shall provide, in addition to the requirements set forth in § 35.208–2(a), a certification document submitted by the State planning agency designated pursuant to § 130.12 of this Chapter, which document shall include a statement that the State has reviewed the application and finds that:

(1) The proposed work complies or does not comply with all State requirements, including any applicable plan(s) prepared pursuant to Part 131 of this Chapter;

(2) The proposed planning work program is or is not adequate and necessary to accomplish the development of a plan pursuant to Part 131 of this Chapter;

(3) Insofar as is known, the planning will or will not duplicate any work which has been done or is being done to meet the facilities planning requirements of § 35.917–35.917–9 of this Part and other water quality management planning requirements of Part 131 of this Chapter; and

(4) That the State either recommends or does not recommend that the grant application should be approved by EPA.

(c) State planning agencies shall submit, in addition to the requirements of § 35.208–2(a), evidence of compliance with the procedures of § 130.13 of this Chapter, including evidence that adequate communication was made with chief elected officials of local units of government in the designation of local areas.

§ 35.210 Review, certification and approval of grant application.

§ 35.210–1 State review and certification of grant applications from areawide planning agencies designated by the Governor(s).

(a) The State planning agency designated pursuant to § 130.12 of this Chapter shall, within 45 days after receipt of a grant application review the application and either certify or refuse to certify the application and proposed work plan outline.

(b) Upon completion of the review required by § 35.210–1(a), the State planning agency shall either:

(1) Return the grant application, including the certification document, to the applicant for forwarding of two copies to the appropriate Regional Administrator, or

(2) Forward two copies of the application, including certification documents, to the appropriate Regional Administrator.

Selection of alternatives (b) (1) or (2) of this section shall be based on the applicant's preference.

(c) If the application is not certified, the State planning agency shall, in addition to its actions pursuant to § 35.210–1 (b), notify both the appropriate Regional Administrator and the applicant as to the specific reasons for non-certification and specify the changes which are needed for State certification of the application.

(d) The procedures set forth in § 35.210(1) (a) through (c) shall be followed by intrastate and interstate areawide planning agencies, except that where the applicant is an interstate agency, the State planning agency in the State which includes the largest portion of the area's population shall coordinate the review and certification process and shall have an additional 15 days to complete the process.

§ 35.210–2 EPA review and approval.

(a) No grant application will be accepted for EPA review that is incomplete or not accompanied by the State certification documents required pursuant to § 35.208–2 herein.

(b) The Regional Administrator shall review the application and supporting documentation to determine its compliance with the applicable requirements of the Act and these provisions, the capability of the proposed program to meet the required outputs of section 208 of the Act, and reasonableness of the estimated costs of the proposed program.

(c) Generally within 45 days after receiving the application, and in accordance with the provisions of § 35.212 herein, the Regional Administrator shall:

(1) Award a grant to the applicant in the amount determined to meet the requirements of § 35.214; or

(2) Notify the applicant that the grant application is deficient in one or more respects and specify in which ways the application must be modified to receive EPA approval; copies of such notifications will be forwarded to all concerned States at the time the applicant is notified of EPA action.

§ 35.212 Grant award and adjustment.

(a) *Grant award*. Grants will be awarded in an amount which the Regional Administrator determines is appropriate for the program outlined in the grant application submitted pursuant to § 35.208–2.

(b) *Grant adjustments*. Such grants shall be subject to adjustment by the Regional Administrator, after his review and approval of the work plan submitted pursuant to § 35.220, and after consultation with the appropriate State and the applicants, to reflect his determination of actual approved financial needs.

(c) *Limitation on grant amount*. The grant amount, after adjustment pursuant to § 35.212(b), if any, shall constitute the grantee's final maximum grant amount for a Section 208 grant. In the event of grantee noncompliance, the Regional Administrator may reduce the grant amount or terminate the grant pursuant to § 30.915 and § 30.920 of this Chapter.

§ 35.212–1 Rate of Federal assistance.

The rate of Federal assistance furnished to a grantee shall be in accordance with the provisions of the Act.

§ 35.212–2 Matching.

Pursuant to § 30.720 of this Chapter, contributions required to match Federal funds may be reflected in contributions to either direct or indirect costs; in-kind contributions are permitted. Contributions to matching are allowable only if they are verifiable from the grantee's records; not included is cost sharing or matching contributions for any other Federally-assisted program; otherwise properly allocable to the project; and are expended for allowable project costs.

§ 35.212–3 Period of grant.

Federal assistance shall be for one or more consecutive budget periods, the total grant period beginning on the date of execution of the grant agreement and ending on the date on which the plan is approved by the appropriate Regional Administrator pursuant to § 35.228.

§ 35.214 Grant conditions and limitations.

Each grant awarded an areawide planning agency pursuant to these provisions is conditioned upon the subsequent submission of an approvable work plan pursuant to § 35.220–3.

§ 35.216 Allowable and unallowable costs.

Grant funds shall be expended by the grantee solely for the reasonable and allowable costs of the approved project in accordance with the terms of the grant agreement pursuant to the requirements of this Subpart and § 30.700 of this Chapter.

Allowable and unallowable costs shall be determined in accordance with § 30.705 of this Chapter and by demonstration that the costs are reasonable for carrying out an approved grant project. While costs incurred as a result of following an approved work program would generally be allowable, provided that they are not prohibited elsewhere by Federal, State or local law or regulations, the costs incurred by activity related to the following shall be unallowable:

(a) Costs incurred in development of a grant application for an areawide planning grant;

(b) Costs incurred in sewer evaluation surveys as required under § 35.927–2 of this Part,

(c) Costs incurred in detailed sewer system mapping and surveys therefor;

(d) Costs related to sewage collection systems at less than the trunk line level;

(e) Costs related to obtaining or providing information for sewer systems, other than the costs of determining the following items in sufficient detail to make informed judgments on the cost effectiveness of available alternatives: tributary or service areas, routes, sizes, capacities and flows, critical control elevations required to show ability to serve tributary areas, lengths, staging, major impediments to construction, and costs of construction operation; data concerning lift stations shall be limited to location, size, energy requirements and capital and operating costs; costs of gathering and analyzing information required for economic, environmental and social evaluations shall be eligible;

(f) Costs related to obtaining or providing treatment works, other than the costs of determining the following items in sufficient detail to make informed judgments on the environmental impacts and cost effectiveness of available alternatives: size, location, which shows adequacy of the site including provision for expansion, major systems for treatment of influent and disposal of effluent and sludge, flow and waste reduction, anticipated effect of treatment, staging and capital and operating costs and energy requirement;

(g) Costs of special studies for the specific benefit of individual, industrial or commercial establishments; and

(h) Costs of activities which are primarily of a research nature.

§ 35.218 Payments.

§ 35.218–1 Payment method.

The Regional Administrator will determine the payment method authorized for each grant award pursuant to § 30.615 of this Chapter. Ordinarily, the advance payment method will be authorized. However, when the Regional Administrator determines it is in the Agency's interest, the reimbursement method may be required.

§ 35.218–2 Advance payments—letter of credit.

(a) When the Regional Administrator determines that a grant award will be financed through advance payments, the Regional financial management officer will apply Treasury Department regulations to determine whether payment will be by letter of credit or Treasury check. Generally letter of credit will be used when annual payments under awards providing for advance financing aggregate to $250,000 or more. When the letter of credit method is selected, it will be stipulated in the grant agreement. The grant agreement will require:

(1) That cash drawdowns be made only when actually needed for payment of the Federal share of liabilities relating to project costs,

(2) Timely reporting as required by § 35.232,

(3) Imposition of the same Treasury Department standards on secondary recipients, and

(4) Obligation of funds in accordance with the grant agreement.

(b) The letter of credit may be issued for the entire award or any part thereof, with subsequent amendments for the balance as the Regional Administrator determines. An initial fund letter of credit, will be issued to State and areawide planning agencies to the extent that the grantees demonstrate the need for For areawide agencies, this initial fund will generally not exceed five percent (5%) of the total grant award and will be earmarked for work plan development such funds. Subsequent amendments for the balance of the grant amount will be approved only after approval of the work plan by the Regional Administrator. Withdrawal of cash through the letter of credit will be monitored by EPA through the payment vouchers and quarterly financial reports submitted pursuant to § 35.232–2.

§ 35.218–3 Advance payments—Treasury check.

If a grant award for which advance financing is authorized does not meet the criteria for letter of credit, payment may be made by Treasury check. In this instance, the Regional Administrator will negotiate an initial cash advance. For areawide agencies, this initial advance will generally not exceed five percent (5%) of the total grant award and will be earmarked for work plan development. If the grantee does not expect to use the advance immediately, payment must be scheduled for a later date when need becomes immediate. Once the initial advance is made, the grantee may request replenishment of funds expended by submitting the Request for Advance or Reimbursement form. This form may be submitted quarterly but no less frequently than annually. It is the policy of EPA that large amounts of cash advances not remain unused in the hands of grantees. Therefore, EPA will monitor use of cash advances through the required financial reports and will request reduction of the outstanding advance where lack of use is indicated.

§ 35.218–4 Reimbursable payments.

Where advance financing is not authorized, payment will be made upon the grantee's submission of a Request for Advance or Reimbursement form. Through this form, the grantee will request reimbursement of the Federal share of expenditures related to the grant agreement for the period since the previous request for reimbursement. Submission of reimbursement requests may be made as often as necessary.

§ 35.218–5 Compliance.

Where the Regional Administrator determines that the grantee has failed to comply with the requirements for letter of credit, as stated in § 35.218–2, or with reasonable cash management practices with cash advances by Treasury check, or is not in compliance with provisions of the grant agreement, he may convert either payment procedure to the reimbursement method.

§ 35.218–6 Withholding of funds.

In accordance with the provisions of § 30.615–3 of this Chapter, an amount not to exceed ten percent (10%) of the grant award amount may be withheld for noncompliance with a program objective, grant condition, or reporting requirement.

§ 35.220 Work plan development.

[illegible].220-1 Applicability.

The specific requirements of this section are applicable only to work plans related to grants awarded after June 30, 1975.

§ 35.220-2 Content.

(a) Planning in State planning areas. State planning agencies must submit a work plan based on the approved continuing planning process, including the State/EPA agreement, prepared pursuant to § 130.10 of this Chapter, and which is consistent with the requirements herein and the requirements of § 130.11 of this Chapter. The work plan shall be included as an element of the State program plan submitted pursuant to section 106 of the Act which will set forth a work schedule, cost and resource budget and disbursement schedule.

(b) Planning in areawide planning areas. Designated areawide planning agencies must submit a work plan which contains:

(1) A description of all work performed to date which will be used in the plan development;

(2) A description of the proposed planning process developed pursuant to § 130.10 of this Chapter which will be utilized to (i) identify and evaluate feasible measures to control point and nonpoint pollution sources, which measures may take into account all source location and review measures necessary to meet State implementation plan requirements in the area, (ii) develop an integrated areawide plan to control these sources, and (iii) establish an areawide management program (including financing) for plan implementation;

(3) A description of any necessary action in the planning to be taken by agencies other than the applicant and procedures to be used in coordination of such activities; documentation of the acceptance by the affected responsible agency of such required work or action shall be included and presented with the work plan;

(4) A schedule showing required interrelationships of work to be accomplished and anticipated dates of completion;

(5) A cost and resource budget, including work to be done under contract or by interagency agreement, and

(6) A proposed disbursement schedule with specific progress milestones related to disbursements.

§ 35.220-3 Submission.

As expeditiously as possible, grantees conducting State and areawide planning must submit to the Regional Administrator a written work plan meeting the requirements of § 35.220-2. For areawide planning agencies, the work plan shall be submitted not later than twelve months from the date of the Administrator's approval of the designation. A copy of the areawide planning agency's work plan and future significant modifications thereto shall be provided to the State planning agency designated pursuant to § 130.12 of this Chapter for review and comment. Pursuant to § 35.220-3, submission and approval of the work plan is a precondition to release of grant funds for further areawide planning pursuant to Part 131 of this Chapter.

§ 35.220-4 Funding for work plan development.

Where the grant agreement, subject to provisions of § 35.212, provides for work plan development, the grantee will obligate generally not to exceed five percent (5%) of the total award for that purpose. Further additional obligation is not authorized until approval of the work plan is granted by the Regional Administrator. Where work plan development is set as a milestone in the grant agreement, the decision on size of the initial advance will take into account this five percent (5%) limitation.

§ 35.222 Plan development.

§ 35.222-1 Plan development period—areawide planning agencies.

(a) For each areawide grantee, the Regional Administrator shall establish a date (not more than one year from the date of the Administrator's approval of the designation of the grantee agency) on which he determines that the grantee's planning process becomes operational. The grant agreement shall be amended to include this date. The grantee's areawide plan must be submitted through the Governor to the Regional Administrator for approval no later than two years from the date so established pursuant to § 131.20(i). For grants awarded after June 30, 1975, the date so established will generally be the date of approval of the grantee's work plan submitted pursuant to § 35.220 herein. For grants awarded prior to July 1, 1975, the Regional Administrator shall select the date upon which the planning process becomes operational based on the following four elements:

(1) The hiring of sufficient personnel by the grantee to perform the work as outlined in the work plan required under § 35.220;

(2) The establishment of a policy advisory or other appropriate committee by the grantee;

(3) The initiation of major work elements (or date of award of contracts for one or more such elements) by the grantee; and

(4) Such other work plan requirement(s) the Regional Administrator shall determine as a requirement for the planning process to become operational.

(b) Pursuant to § 130.13(f) of this Chapter, the Governor of each State may make subsequent designations of appropriate areawide planning agencies. Where such a designation occurs after the State has already received a grant for section 208 planning, the plan development period for the areawide planning agency so designated shall end on the earlier of two dates: (1) Two years from the date the planning process of the newly designated areawide planning agency is determined by the Regional Administrator to be operational pursuant to § 35.22-1(a); or (2) November 1, 1978.

§ 35.222-2 Plan development period—State planning agencies.

Pursuant to § 131.20(i) of this Chapter, State planning agencies must submit section 208 plans to the Regional Administrator for approval no later than November 1, 1978.

§ 35.224 Content of plan.

Each State and areawide planning agency shall develop and submit to the Regional Administrator for approval a plan consistent with these provisions and which meets the requirements of Part 131 of this Chapter.

§ 35.226 Submission of the plan.

Submission of plans prepared pursuant to these provisions shall be in accordance with § 131.20 of this Chapter.

§ 35.228 Plan approval.

EPA approval of plans prepared pursuant to these provisions shall be in accordance with § 131.21 of this Chapter.

§ 35.230 Authority of States for nonpoint source planning in areawide planning areas.

Whenever the Governor of any State determines (and notifies the Regional Administrator) that consistency with a Statewide regulatory program under section 303 of the Act so requires, the requirements of § 131.11(j) through (l) of this Chapter shall be developed by the State and submitted by the Governor to the Regional Administrator for application to all regions within such State. All requirements of such State programs shall be incorporated into each affected areawide plan. The plan shall set forth such additional local actions and programs as may be necessary for implementation of the plan developed by the State.

§ 35.232 Reports.

During the grant period, grantees will be required to submit interim progress reports and financial status reports at intervals set forth below. Failure to comply with established reporting requirements in a timely manner will result in appropriate action pursuant to § 30.430 of this Chapter.

§ 35.232-1 Interim progress reports.

Grantees shall monitor the performance under grant-supported activities to assure that time schedules are being met, projected work units by time periods are being accomplished, and other performance goals and milestones are being achieved. Within 30 days following the end of each quarterly period after the effective date of the grant, the grantee shall prepare and submit to EPA for review a brief interim progress report addressing the milestones in the approved work plan. A copy of this report shall also be submitted to the State planning agency, designated pursuant to § 130.12 of this Chapter, which shall expeditiously review the report and submit its comments to EPA. The Regional Administrator may, at his discretion, determine that semi-annual reporting is adequate. The report of progress shall include, but should not be limited to, narrative presenting:

(a) A comparison of actual accomplishments to the goals established for the period;

(b) Any problems, delays, or adverse conditions which have (or will) affect the ability of the grantee to attain work plan objectives;

(c) Favorable developments or events which enable the grantee to meet time schedules or milestones sooner than anticipated;

(d) Any major changes in the overall program, work plan, budget, organization or staffing for the period; and

(e) Other pertinent information including, where appropriate, analysis and explanation of cost overruns or high unit costs.

§ 35.232–2 Financial status reports.

(a) Grantees shall be required to submit the financial status report at the end of each quarter. The report shall be on an accrual basis. However, if a grantee cannot report on this basis, a request for waiver may be submitted to the Regional Administrator. The Regional Administrator may approve reporting on a cash basis. The original and one copy shall be submitted 30 days after the end of each reporting period. In addition, final reports shall be submitted 90 days after the end of the project period.

(b) Grantees financed under a letter of credit or advances by Treasury check will also submit the Federal cash transactions report within 15 days following the end of each quarter. The grantee shall forecast Federal cash requirements for the next quarter in the Remarks section of this report.

§ 35.234 Suspension and termination.

In accordance with the provisions of §§ 30.915 and 30.920 of this Chapter, the Regional Administrator may suspend or terminate any grant awarded pursuant to these provisions. Areawide planning areas whose grants are terminated pursuant to this section shall became part of the State water quality management planning area for which the State planning agency shall conduct planning pursuant to section 208(a)(6) of the Act: grant funds for which costs have not been incurred by areawide planning agencies prior to termination may be transferred to the State planning agency in accordance with the provisions of § 30.900-3 of this Chapter.

§ 35.236 Disputes.

Final determinations by the Regional Administrator concerning applicant ineligibility and final determinations by the Regional Administrator concerning disputes arising under a grant pursuant to these provisions shall be final and conclusive unless appealed by the applicant or grantee within 30 days from the date of receipt of such final determination in accordance with the "Disputes" article of the General Grant Conditions (Article 7 of Appendix A to this Subchapter).

[FR Doc.75-32014 Filed 11-26-75;8:45 am]

APPENDIX I-2

CITATIONS TO STATE CONSERVATION DISTRICT LAWS

Citations to Conservation Districts Laws

Alabama - Soil Conservation Districts
Code of Ala. Tit. 2, Secs. 658-670

Alaska - Soil Conservation District Law
Alas. Stats. Secs. 41.10.010 - 41.10.150

Arizona - Natural Resource Conservation Districts
Ariz. Rev. Stats. Ann. Secs. 45-2001 - 45-2057

Arkansas - Conservation Districts Law
Ark. Stats. 1947 (1976 Replacement), Secs. 9-901 - 9-938

California - Resource Conservation
Deering's Calif. Code, Pub. Res. C.A. Secs. 9001 _et seq_.

Colorado - Colorado Soil Conservation Act
Col. Rev. Stats. (1973), Secs 35-70-101 - 35-70-121

Connecticut - Soil Conservation
Gen. Stats. Conn. (1977), Secs. 25-104 - 25-109b

Delaware - Soil and Water Conservation Districts
Del. Code Ann. (1974 Rev.), Secs. 3901 - 3925

Florida - Soil and Water Conservation
Fla. Stats. Ann., Secs. 582.01 - 582.49

Georgia - Soil and Water Conservation Districts Law
Ga. Code Ann. (1975 Rev.), Secs. 5-1801 - 5-1811

Hawaii - Soil and Water Conservation Districts
Hawaii Rev. Stats. (1968) Secs. 180-1 - 180-17

Idaho - Soil Conservation Districts Law
Idaho Code Sections 22-2714 - 22-2727

Illinois - Soil and Water Conservation Districts Law
Ill. S.H.A. Ch.5, Secs. 106 - 138.2

Indiana - Soil and Water Conservation Districts Act
Burns Ind. Stats. Ann. (1973), Secs. 13-3-1-1 - 13-3-1-14

Iowa - Soil Conservations Districts Law
Iowa Code Ann. (1971), Secs. 467A.1 - 467A.53

Kansas - Conservation Districts Law
Kan Stats. Ann. (1975) Secs. 2-1901 - 2-1918

Kentucky - Soil and Water Conservation
Ky. Rev. Stats. Ann Secs. 146.080 - 146.090;
262.010 - 262.795

Louisiana - Soil and Water Conservation Districts
La. Rev. Stats. Secs 3-1201 - 3-1255

Maine - Soil Conservation Districts Law
Me. Rev. Stats. Ann. Tit. 12, Secs. 1 - 201

Maryland - Maryland Soil Conservation Districts Law
Ann. Code of Md. (1974) Agriculture Sec. 8-101 - 8-501

Massachusetts- Conservation Districts
Ann. Laws of Mass. (1973) Ch. 21, Secs. 18 - 25

Michigan - Soil Conservation Districts Law
Mich. Stats. Ann. (1973), Secs. 13.1781 - 13.1796

Minnesota - Soil and Water Conservation
Minn. Stats. (1971), Secs. 40.0005 - 40.15

Mississippi - Soil and Water Conservation District Law
Miss. Code 1972 Ann., Secs. 69-27-1 - 69-27-69

Missouri - Soil and Water Conservation Districts Law
Mo. Rev. Stats. 1969, Secs. 278.060 - 278.300

Montana - Rev. Codes of Mont., Secs. 76-101 - 76-117

Nebraska - Natural Resources
Rev. Stats. of Neb. of 1943 (1974), Secs. 2-3201 - 2-3272

Nevada - Conservation Districts Law
Nev. Rev. Stats., Secs. 548.010 - 548.550

New Hampshire - Conservation Districts
N.H. Rev. Stat. (1968), Secs. 430-B:1 - 430-B:10

New Jersey Soil Conservation; Soil Erosion and Sediment Control
N.J. Stats. Ann. (1973) Secs. 4:24-1 - 4:24-55

New Mexico - Natural Resource Conservation District Act; Watershed District Act
N.M.S.A., Secs. 45-5-41 - 45-5-64

New York - Soil and Water Conservation Districts Law
McKinney's Cons. Law of N.Y., Book 52-B, Secs. 1-15

North Carolina - Soil Conservation Districts Law
Gen. Stats. of N.C. (1974 Replacement), Secs. 139-1 - 139-47

North Dakota- Soil Conservation Districts Law
N.D. Cent. Code Ann., Secs. 4-22-01 - 4-22-51

Ohio - Soil and Water Conservation
Page's Ohio Rev. Code Secs. 1515.01 - 1515.30

Oklahoma - Conservation District Act
Okla. Stats. 1971, Title 82, Sec. 1501-101 - 1501-808

Pennsylvania- Soil and Water Conservation
Purdon's Pa. Stats. Ann., T.3, § 849 - 864

Rhode Island - State Conservation Law
Gen. Laws R.I. Secs. 2-4-1 - 2-4-19

South Carolina - Soil Conservation Districts Law
Code of Laws of S.C. 1962, Secs. 63-51 - 63-167

South Dakota - Soil and Water Conservation
S.D. Comp. Laws 1967 Ann., Secs. 38-7-1 - 38-8-99

Tennessee - Soil Conservation Districts Law
Tenn. Code Ann., Secs. 43-1501 - 43-1523

Texas - State Soil Conservation Law
Vernon's Tex. Civ. Stats., Art. 165a-4 - 165a-10

Utah - Soil Conservation Districts Law
Utah Code Ann. (1968), Secs. 62-1-1 - 62-1-17

Vermont - Soil Conservation Act
Vt. Stats. Ann. 1973, T.10, Secs. 701 - 740

Virginia - Soil Conservation Districts Law
Code of Va. 1975 Replacement, Secs. 21-1 - 21-112.21

Washington - Conservation Districts Law
Rev. Code of Wash. 1976, Secs. 89.08.005 - 89.08.901

West Virginia - Soil Conservation Districts Law of West Va.
W. Va. Code 1977 Replacement, Secs. 19-21A-1 - 19-21A-14

Wisconsin - Soil and Water Conservation District Law
Wisc. Stats. 1973, Secs. 15.915; 92.01 - 92.20

Wyoming - Wyo. Conservation Districts Law
Wyo. Stats (1975 Supp.) Secs. 11 234 - 11-249
Watershed Improvement Dists.
41.354.1 - 41.354.26

Puerto Rico - Soil Conservation
Laws of P.R. Ann. T5, Secs. 241 - 252

Virgin Islands - Soil Conservation
V.I. Code T 7, Secs. 41 - 55

APPENDIX 1-1

EXAMPLES OF MEMORANDUMS OF UNDERSTANDING WITH CONSERVATION DISTRICTS

U.S. Department of Agriculture

Agricultural Stabilization and Conservation Service

Soil Conservation Service

U.S. Department of the Interior

Corps of Engineers

State Forestry Agency

State Fish and Wildlife Agency

MEMORANDUM OF UNDERSTANDING
between the
___________________SOIL (AND WATER) CONSERVATION DISTRICT
and the
UNITED STATES DEPARTMENT OF AGRICULTURE

This memorandum of understanding is between the __________________Soil (and Water) Conservation District, State of ________________, hereinafter called the District, and the United States Department of Agriculture, hereinafter called the Department. It is effective on the date it is signed by or for the Secretary of Agriculture and replaces any memorandum of understanding heretofore entered into between the District and the Department.

STATEMENT OF PURPOSE

The District has been organized pursuant to the Soil (and Water) Conservation Districts law of __________________as a governmental subdivision of the state as evidenced by its certificate of due organization, a copy ofwhich is attached or on file in the Department. It is prepared to exercise within its boundaries public powers as authorized by that law, as amended and supplemented.

The Secretary of Agriculture is authorized under the terms of various statutes administered by the Department to carry out a broad program of assistance to farmers, ranchers, and landowners including soil and water conservation, watershed protection, flood prevention, farm forestry, and rural areas development, and encompassing research, education, technical assistance, cost sharing, and credit. This program may include cooperation with and assistance to soil (and water) conservation districts in conserving and improving soil, water, vegetative, wildlife, and related resources, and in reducing damage by floods and sedimentation.

The District has adopted a program outlining in general its longtime soil and water conservation and resource-use objectives, a copy of which is attached or is on file in the Department. The District is engaged in carrying out this program. The District has or in the future may have available services, facilities, and funds from federal, state, local, and private sources for carrying on its work.

The District and the Department have the common objective of helping to bring about the use of each acre of agricultural and other land within the limits of its capabilities and the treatment of each acre in accordance with its needs for protection and improvement. Cooperation is mutually helpful to the District and the Department in achieving this common objective. This memorandum of understanding establishes an enduring basis for such cooperation and assistance.

A. WHAT THE DEPARTMENT WILL DO

The Department will cooperate with and assist the District in carrying out its longtime soil and water conservation and resource-use program. Such assistance as is consistent with the Department's statutory authority and available resources will be provided through its various agencies in accordance with Departmental regulations. Such assistance will be made available through supplements to this memorandum of understanding or through other appropriate arrangements developed between the District and each agency of the Department cooperating with the District.

B. WHAT THE DISTRICT WILL DO

1. The District, on request or on its own initiative, will consult with and make recommendations to departmental agencies carrying on conservation work within the District, with respect to the development and administration of conservation activities and the overall conservation problems and work plans of the

District, to best effectuate the purpose of those activities.

2. The District will prepare an annual work plan to serve as a guide in carrying out its program during the year ahead.

3. Where the aid to be furnished by the District to owners and operators of land in carrying out conservation and resource-use plans requires assistance provided the District by an agency of the Department, the District will enter into agreements with those owners and operators, fixing the responsibilities of the parties in carrying out those plans. The forms of such agreements are to be acceptable to the Departmental agency concerned. Where assistance is limited to consultive type services, suitable informal arrangements rather than formal agreements are appropriate.

4. The District will be responsible for determining the kind, amount, and priority of work to be performed by it on farms, ranches, and other land and for seeing that the provisions of agreements it enters into with owners and operators of land are carried out.

5. The District will provide such funds, personal services, and facilities as it is able to obtain for carrying on its work.

6. The District will not charge for assistance made available by the Department and will conduct its work in such manner that cooperating land owners and operators and the general public will understand that any charges it may make are not for that assistance.

7. Within 60 days after the end of each calendar year, or of each fiscal year of the state, the District willsubmit to the Department of Agriculture, through the state conservationist of the Soil Conservation Service, an annual report on the District's activities and accomplishments. The District will send a copy of its annual report to each cooperating Departmental agency. The District will keep its records in such a way that the agencies of the Department cooperating with the District may obtain adequate information as to the District activities by examining these records.

8. The District will inform all cooperating agencies of the Department of any substantial changes in its longtime program in order to avoid possible misunderstandings in carrying out the District's work.

C. IT IS FURTHER UNDERSTOOD

1. Assistance supplied to the District by a Departmental agency will be furnished in accordance with the agency's applicable authorities and policies.

2. Any assistance by Departmental agencies for carrying on educational or farm forestry work made available to the District will be furnished in accordance with existing or future agreement between the Department or its agencies and state agencies.

3. This memorandum is not to be construed to affect the jurisdiction of the federal government, or any agencies thereof, over federally-owned land which may lie within the boundaries of the District.

4. Departmental agency personnel and facilities are to be under the administrative jurisdiction of the Departmental agency involved.

5. Any equipment and materials made available to the District by Departmental agencies are to be utilized by the District in accordance with an agreement entered into governing their use.

6. Personnel, facilities, and funds available to the Districts from state, local and private sources are to be under the administrative jurisdiction of the District or of the cooperating state or local agency.

7. Neither the Department nor the District are to be bound by any obligation in this memorandum or any supplement thereto or other appropriate arrangements that involve the expenditure of funds in excess of the amounts made available to it or for a period in excess of that authorized by law.

8. All matters that may require administrative action or approval by any agency of the Department will be handled through the established administrative procedures of that agency and of the Department.

9. This memorandum can be modified or terminated at any time by mutual consent to the parties thereto or can be terminated by either party alone by giving 60 days notice ir writing to the other.

10. An supplemental memorandums of understanding or other appropriate arrangements now in effect between the District and an agency of the Department are to remain in full force and effect and to be subject to all of the provisions hereof.

____________________SOIL (AND WATER) CONSERVATION DISTRICT

BY____
Chairman, District Governing Body

The signing of this memorandum of understanding was authorized by a resolution of the district governing body adopted at a meeting held on

____________________, 19_________.

____
Secretary, District Governing Body

Date:____________________, 19__.

UNITED STATES DEPARTMENT OF AGRICULTURE

By__________________________________
Secretary of Agriculture

Date____________________, 19________.

SUPPLEMENTAL MEMORANDUM OF UNDERSTANDING
between the

____

CONSERVATION DISTRICT, State of______________
and the

_______________COUNTY AGRICULTURAL STABILIZATION AND
CONSERVATION COMMITTEE

The ____Conservation District of ____________________________ and the Secretary, United States Department of Agriculture, have entered into a basic Memorandum of Understanding, which was signed by the District on _______________19___. That Memorandum establishes a basis for the cooperation of all agencies of the Department with the District.

The County Agricultural Stabilization and Conservation Committee, hereinafter called the committee, is authorized under the terms of various statutes administered by the U.S. Department of Agriculture to carry out a broad program of cost-sharing assistance to farmers, ranchers, and other eligible landowners including a program of soil and water conservation, watershed protection, flood prevention and forestry. This program includes cooperation with conservation districts in conserving and improving soil, water, vegetative, wildlife, and related resources, and in reducing damage by floods and sedimentation.

The district and the committee have the common objectives of helping to bring about the conservation, development and wise use of land, water, and related resources. They, therefore, enter into this memorandum of understanding as the foundation for enduring cooperative working arrangement. This memorandum supplements the Memorandum of Understanding between the District and Department referred to above, and is subject to all provisions of the Memorandum of Understanding.

A. What the District Will Do:

1. The District will (a) adopt a procedure for the orderly and progressive development and application of conservation and resource development plans for farms, communities, watersheds, and other land units, (b) be responsible for determining the recipients of services provided by the District and for setting priorities for the kind and amounts of work to be performed in the District, and (c) develop a systematic method for group and individual followup work essential to the carrying out of conservation and resource development plans.

2. The District will invite the committee to participate in the development of its annual work plan and long-range program and will make these available to the committee for its use in developing its county conservation cost-sharing program.

3. The District will advise farmers and landowners of the cost-sharing assistance available through the committee.

4. The District will participate in the development of the county plan and conservation cost-sharing program.

5. As requested and feasible, the District will assist the committee in carrying out its conservation cost-sharing program. In relation to long-term agreements under the conservation cost-sharing program, the District shall (1) review and approve, when adequate, the required conservation plans of operations; (2) consider and, in concurrence with the Soil Conservation Serice, recommend priority ratings of applicants; and (3) make recommendations on indicated violations and possible cancellations or terminations.

6. Within 60 days after the end of their fiscal year, the District will send to the committee a copy of the annual report of the District's activities and accomplishments.

B. What the Committee Will Do:

1. The Committee, in cooperation with the county program development group, is responsible for developing the county plan and conservation cost-sharing program for the county. The committee will invite the District and representatives of other Federal and State agencies to participate in the development of this plan and program and other conservation programs.

2. The committee will consider the District's long-range objectives and annual work plan in developing its county plan.

3. The Committee will request the District to assist in carrying out the conservation cost-sharing program and other conservation program.

4. The committee will inform those eligible of the availability of cost-sharing for the establishment of conservation practices included in their District conservation plans.

5. The committee will give priority to providing cost-sharing assistance for accelerating land treatment in RC&D and P.L. 566 projects as applicable.

6. The committee will encourage landowners to become District Cooperators and to develop and establish conservation plans.

7. The committee will furnish such other assistance, as may be mutually agreed upon, to the District to aid in carrying out any of its duties and programs.

8. The committee will provide a copy of its annual report to the District.

C. It is Further Understood:

1. District personnel and facilities will be under the administrative jurisdiction of the District and committee personnel and facilities will be under the administrative jurisdiction of the committee.

2. The governing boards of the District and the committee will meet jointly, in addition to the annual program development meeting, at least once a year to discuss priorities of conservation activities involving cost-sharing and technical services essential to attaining soil and water conservation and resource-use objectives. Such meetings may include field reviews to determine progress.

3. In instances where the geographical boundaries of the District and the commitee do not coincide, the District(s) and committee(s) shall mutually develop appropriate liaison and representative arrangements.

4. Other cooperative arrangements between the District and the committee: (add here any additional items as appropriate)

5. This Supplemental Memorandum of Understanding will be effective when signed. It may be modified or terminated at any time by mutual consent of the parties hereto or may be terminated by either party alone by giving sixty (60) days notice in writing to the other.

_______________________________CONSERVATION DISTRICT

By ____
Chairman, District Governing Body

Date:______________________, 19_____.

The signing of the Memorandum of Understanding was authorized by a resolution of the District Governing Body Adopted at a meeting held on ___________________________, 19______.

____
Secretary, District Governing Body

Date:______________________, 19_______.

_______________________________County Agricultural Stabilization and Conservation Committee

By____
Chairman, County Committee

Date:____________________________,19____.

SUPPLEMENTAL MEMORANDUM OF UNDERSTANDING

between the

____

CONSERVATION DISTRICT, State of ________________

and the

SOIL CONSERVATION SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

The ____________________________________Conservation District, of ____________________________________and the Secretary, United States Department of Agriculture, have entered into a basic memorandum of understanding, which was signed by the District on the _______day of___________, 19____. That memorandum establishes a basis for the cooperation of agencies of the Department with the District.

Under the terms of the Soil Conservation Act of 1935 and other acts, the Soil Conservation Service is authorized to cooperate with and to furnish assistance to the District for conservation and resource development work.

The District and the Soil Conservation Service have the common objective of helping to bring about the conservation, development,and wise use of land, water, and related resources. They, therefore, enter into this memorandum of understanding as the foundation for an enduring cooperative working arrangement. This memorandum supplements the memorandum of understanding between the District and the Department referred to above, and is subject to all the provisions of that memorandum of understanding.

A. What the Soil Conservation Service Will Do.

1. SCS will make available to the District the services of personnel qualified in carrying out resource planning, conservation, and development and will provide such facilities as its employees may require. Through its state conservationist, SCS will designated a conservationist as its primary staff member for assisting the District.

2. SCS assistance will be allocated in accordance with an annual plan of operations prepared by SCS in consultation with the District and based upon the District's annual work plan. SCS will consult with the District whenever substantial changes in assistance to be made available are contemplated and will notify the District in advance whenever changes are to be made.

B. What the District Will Do.

1. The District will (a) adopt a procedure for the orderly and progressive development and application of conservation and resource development plans for farms, communities, watersheds,and other land units, (b) be responsible for determining the recipients of services provided by the District and for setting priorities for the kind and amounts of work to be performed in the District, and (c) develop a systematic method for group and individual followup work essential to the carrying out of conservation and resource development plans.

2. The District's annual work plan, which will be prepared as a guide for its work and activities for the year ahead, will include whatever information SCS needs for preparing its annual plan of operations.

3. The District will keep records of all materials and equipment furnished it by SCS in accordance with agreements regarding such materials and equipment. Such records will be available for examination at any reasonable time by accredited SCS representatives.

C. It is Further Understood

1. Either party, as mutually agreed upon, will provide or arrange for such additional services, facilities, equipment, materials, and arrangements as may be required to achieve common objectives.

2. SCS personnel and facilities, all of which will be under SCS jurisdiction will be located insofar as feasible at headquarters mutually satisfactory to the District and to SCS. SCS retains the right to establish headquarters for its personnel at such places as it deems most appropriate.

3. The program conducted will be in compliance with all requirements respecting nondiscrimination as contained in the Civil Rights Act of 1964, as amended, and the regulations of the Secretary of Agriculture (7 C.F.R. Sec. 15.1 - 15.12), which provide that no person in the Untied States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity receiving federal financial assistance from the Department of Agriculture or any agency thereof.

4. This supplemental memorandum of understanding will be effective when signed by both parties and will continue in effect for the duration of the basis memorandum of understanding referred to above, except that it may be modified or terminated at any time by mutual consent of the parties hereto, or may be terminated by either party by giving 60 days notice in writing to the other party.

____
CONSERVATION DISTRICT

By:______________________________
Chairman, District Governing Body

Date:______________________19______.

The signing of this supplemental memorandum of understanding on behalf of the District was authorized by a resolution of the district governing body adopted at a meeting held on the _______day of the _______________19_______________.

____
Secretary, District Governing Body

Date:______________________19____________ .

SOIL CONSERVATION SERVICE

United States Department of Agriculture

By______________________________
State Conservationist, Soil Conservation Service

Date:______________________19________.

MEMORANDUM OF AGREEMENT

Between the

United States Department of the Interior

and the

STATEMENT OF PURPOSE

The Conservation District has been organized pursuant to the Soil and Water Conservation District Law of the , as a governmental subdivision of that State, to exercise public powers in connection with soil conservation and development of natural resources within its boundaries. The District has developed a program outlining the extent and condition of its soil and natural resources and its long range objectives with respect to these resources. It has also formulated a plan of action setting forth how it proposes to carry on its conservation and resource development activities. Copies of the program and plan of action are on file in the District Office and may be inspected by any of its cooperating agencies at any time. The District has, or may have in the future, under its control, funds, services, and facilities contracted from private. local, State, or Federal sources for its use in carrying on its work.

The Secretary of the Interior is authorized under the terms of various statutes administered by the United States Department of the Interior to cooperate with and to assist Soil and Water Conservation Districts in achieving the conservation and development of the soil and natural resources on lands under the jurisdiction of the Department of the Interior. Such cooperation and assistance can be mutually helpful to the District and the Department in reaching their common objectives.

In view of these considerations, the District and the Department desire to establish a basis for such mutual cooperation and assistance, and therefore enter into this Memorandum of Agreement.

A. WHAT THE DEPARTMENT WILL DO

The Department of the Interior, through its various agencies, will, consistent with statutory authority and available resources, and in accordance with departmental regulations, cooperate with and assist the District in conducting a soil and natural resources program. Such assistance will be made available in accordance with Supplements to this Memorandum of Agreement, or other appropriate arrangements to be entered into between the District and each agency of the Department cooperating with the District.

B. WHAT THE DISTRICT WILL DO

1. The District will prepare and adopt a long-range program, and an annual work plan, both of which it will keep current, as guides to show how it proposes to carry on its activities in the development and management of its natural resources.

2. Where the aid and assistance is made available to the District by an agency of the Department, the District will enter into a supplemental agreement with the agency furnishing the assistance, fixing the responsibilities of each in carrying out the District's program. The forms of such agreement are to be acceptable to the Departmental agency involved.

3. The District will be responsible for developing a plan and schedule of work to be performed by each of its cooperators, in furtherance of the provisions of agreement it enters into.

4. The District will provide such funds, personal services, and facilities that it is able to obtain for carrying on its work.

5. The District will keep its records in such a way that the agencies of the Department cooperating with the District may obtain adequate information as to the District's activities and accomplishments. Once each year the District will submit to the Department a report of its accomplishments and activities for the year ending December 31

6. The District will inform all cooperating agencies of any substantial changes in its program and its work plan, in order to avoid possible conflicts in carrying out an integrated District program, consistent with departmental objectives and programs, on lands under the jurisdiction of the Department of the Interior.

C. IT IS FURTHER UNDERSTOOD

1. Assistance supplied to the District will be furnished in accordance with departmental regulation. The types of assistance to be furnished in any State will depend upon the adequacy of the State Soil and

Water Conservation District law which authorizes Districts to carry out well-planned and coordinated programs for the development and management of their natural resources.

2. Any assistance made available to the District by departmental agencies will be furnished in accordance with existing or future agreements between the Department or its agencies and the District.

3. This Memorandum shall not be construed to affect the jurisdiction of the Federal Government, or any agencies thereof over lands under the jurisdiction of the Department of the Interior which may lie within the boundaries of the District.

4. Neither the Department of the Interior nor the District is bound by any obligation in this Memorandum or any Supplement thereto which will involve the expenditure of funds in excess of the amounts made available to it, or for a period in excess of that authorized by law.

5. All matters that may require administrative action or approval by any agency of the Department will be handled through the established administrative procedures of that agency and of the Department.

6. This Memorandum shall be effective when signed by both parties. It may be terminated or modified at any time by agreement of the parties, and may be terminated by either party alone by giving sixty (60) days' notice in writing to the other.

The signing of this Memorandum of Agreement was authorized by a resolution of the District Governing Body adopted at a meeting held on , 19

(Secretary, District Governing Body)

, 19

(Date)

(Secretary of the Interior)

, 19

(Date)

APPENDIX A

MEMORANDUM OF AGREEMENT
Between the

____________District
and the

Corps of Engineers, Department of the Army

Statement of Purpose

The purpose of this Memorandum of Agreement is to provide for cooperation between the ______________________Conservation District, established pursuant to the laws of the State of__________________, and the Corps of Engineers of the Department of the Army, in the planning and carrying out of projects and programs for the conservation, wise utilization, and efficient development of the land, water, and related resources within the ______________________ Conservation District.

A. What the Corps of Engineers Will Do.

1. The Corps of Engineers will call upon the District at an early stage for advice and recommendations in the planning and carrying out of any projects and programs the Corps may undertake within the District.

2. The Corps of Engineers will notify the District of all public hearings on proposed projects and project plans which would affect the land, water, and related resources within the District.

3. The Corps of Engineers will make available to the District such information, technical advice, and assistance as it may request, subject to the limitations of paragraph C-1 of this Agreement.

4. The Corps of Engineers will enter into agreements supplemental to this Agreement setting forth in all necessary detail (a) the nature of any assistance to be rendered in connection with the carrying out of a specific project or program, and (b) the arrangements under which such assistance is to be made available.

B. What the Conservation District Will Do

1. The District will assist the Corps of Engineers in carrying out any activities which the latter may undertake within the boundaries of the District by furnishing such advice and recommendations as may, in its opinion, result in better coordiantion of the Corps activity with the long-range plan of the District.

2. The District will provide the Corps of Engineers with copies of any annual and long-range work plans it may adopt and its annual reports.

3. The District will call upon the Corps of Engineers for such information, technical advice, and assistance in the planning and carrying out of aspects of the District's activities as the Corps may be particularly well qualified to provide because of its specialized knowledge and experience.

C. Further Understandings

1. Any assistance furnished by the Corps of Engineers under the provisions of the Agreement will be subject to the limitations of its legislative authorities, the regulations of the Department of the Army, and the availability of funds and personnel.

2. Cooperation by the District in carrying out the provisions of this Agreement will be subject to the limitations of the laws establishing the District and the availability of funds and personnel.

3. This Memorandum of Agreement will be effective when signed, and may be terminated at any time by mutual consent of the parties hereto, or by either party after 60 days notice of its desire for termination.

BY:______________________________
Chairman, District Governing Body

Date:______________________________

BY:______________________________
District Engineer,
Corps of Engineers

Date:______________________________

ATTEST: The signing of this Memorandum of Agreement was authorized by a resolution of the District Governing Body adopted at a meeting held on__________________________.

BY:______________________________
Secretary, District Governing Body

Date:______________________________

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF FORESTRY
AND
______________________ SOIL CONSERVATION DISTRICT
(name)

The New Jersey Bureau of Forestry (hereinafter called the Bureau) and the ______________________ Soil Conservation District (hereinafter called the District) clearly recognize that soil conservation and proper forest management are problems of mutual concern to landowners and to those agencies responsible for implementation.

It is the policy of the Bureau to furnish technical advice and assistance to landowners desirous of carrying out forest management practices on their lands.

In order to facilitate this program and to be of assistance to the District in reaching their goals, it is desirable that a mutual agreement be formulated which establishes a working relationship between the District and the Bureau of Forestry.

In order to effect this working relationship, it is mutually agreed as follows:

Within the limits of its authority and available resources the Bureau will:

1. Designate an Area Forester as a representative of the Bureau to the District.

2. Accept referrals for forestry assistance from the District and provide necessary follow-up.

3. Render technical assistance to landowners within the District on all forestry matters, and develop woodland management and planting plans. Copies will be provided for each cooperator and for the District files.

4. Bring to attention of landowners the total district program and encourage their participation in all phases of resource management.

The District will:

1. Use its combined resources to effectively arouse the active interest of landowners and general public, for the necessity, and current procedures for attaining good woodland management.

2. Submit requests for forestry services to the designated forester and consult with him all matters pertaining to forestry including initial planning and land use as it applies to woodlands and tree planting.

It is mutually agreed and understood:

1. That the designated forester will be under the administrative control of the Bureau.

2. That this memorandum shall be effective when signed by both parties hereto. It may be terminated or modified at any time by agreement of the parties, and may be terminated by either party alone by giving 60 days notice in writing to the other.

______________________ ______________________
Date State Forester, Bureau of Forestry

______________________ ______________________
Date Chairman, Soil Conservation District

MEMORANDUM OF UNDERSTANDING
between
MAINE DEPARTMENT OF INLAND FISHERIES AND WILDLIFE
and the
____________________SOIL AND WATER CONSERVATION DISTRICT

The Department of Inland Fisheries and Wildlife is the state agency responsible for the protection and enhancement of the fish and wildlife resources of the state.

Soil and Water Conservation Districts are the state agency with responsibility for developing and implementing overall soil and water [illegible]rvation programs within their assigned geographic areas within the state.

Because of the interrelationships between land [illegible] treatment measures and the habitat of various fish and wildlife species, this [illegible]randum is developed for the purpose of formalizing the working relationships between the signatory parties.

In implementation of the Memorandum, it is agreed that:

THE DISTRICT WILL:

1. Encourage its cooperators to consider fisheries and wildlife values and habitat as part of the overall conservation plans for their land.

2. Consider Department goals, objectives and programs in developing its long range and annual plans.

3. Assist cooperators in the preparation of any necessary permit applications required by the Department, encourage cooperators to acquire any such permits prior to the start of applicable projects, and to withhold assistance when it is known that required permits have not been acquired.

4. Invite regional biologists of the Department to meet with the District Board of Supervisors to discuss matters of mutual interest.

5. Provide technical advice to applicants for Stream Alteration Act Permits.

6. Furnish the Department with copies of any reports, studies, maps, photos, or other documents which will assist the Department in its activities.

THE DEPARTMENT WILL:

1. Provide assistance to the District in the preparation of long-term plans and goals. Assist the District in the preparation of the wildlife sections of such plans and goals.

2. Provide copies of studies, reports, maps, photographs and other documents to the District which will assist the District in its program.

3. Provide guidance to the District and its employees and agents in the identification of wildlife values and habitat identification in furtherance of the planning effort on lands of District cooperators.

4. Refer Stream Alteration Act permit applicants to the appropriate District for assistance on seeding, mulching, channel stabilization, dam construction, etc.

IT IS MUTUALLY AGREED THAT:

1. This memorandum will become effective of the date of the last signature hereto.

2. This memorandum will not obligate either party to the expenditure of funds or manpower in excess fo amounts available. Both parties will render assistance based upon its policies, priorities, work schedules, technical standards, finances, and other considerations.

3. In the event any provision of this memorandum is found to be inconsistent with the terms of other agreements or memorandums already in effect, the inconsistencies will be reconciled by consultation and mutual consent.

4. This memorandum may be terminated at any time by mutual agreement or by either party giving 60 days notice in writing to the other party.

____
Soil & Water Conservation District
By__________Chairman_________Date

Department of Inland Fisheries & Wildlife
______________Commissioner________Date

APPENDIX 1-2

EXAMPLES OF RESOURCE MANAGEMENT SYSTEMS

Cropland

Irrigated Cropland

Pastureland

Native Grazing Land

Woodland

Urbanizing Land

Surface Mine Areas

Streams and Rivers

Waste Utilization and Disposal

Source: Soil Conservation Service

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RESOURCE MANAGEMENT SYSTEMS

for

CROPLAND

Definition - Land used primarily for the production of adapted cultivated or close-growing crops for harvest alone or in association with sod crops.

Suitable Soils - In general, suitable soils include those in capability classes I through IV, and with certain intensive treatments capability classes V, VI, and VII.

Primary Resources - Soil, water, plants.

Objectives -

A. Essential treatment to protect the resource base.

1. Practices that are essential to meet quality standards:

    a. CONSERVATION CROPPING SYSTEM

2. Practices that may be essential to meet quality standards:

    a. That will dispose of surface water runoff at nonerosive velocities. (May include, but are not limited to, terrace, diversion, grassed waterway or outlet, grade stabilization structure.)

    b. That will reduce soil movement by wind or water to within tolerable limits established for each soil (May include, but are not limited to terrace, diversion, contour farming, stripcropping, crop residue management, minimum tillage, field windbreak, subsurface drain.)

    c. That will result in soil conditioning rating indices of 0.0 or above.

B. Additional treatment necessary to improve environmental quality.

1. Reduce soil loss to a level below the tolerable limit by more intensive application of erosion control practices. (May include, but are not limited to, combinations of terraces, diversion, contour farming, stripcropping, crop residue management, minimum tillage, field windbreak, and subsurface drain.)

2. Improve wildlife habitat with:

    a. Field borders

    b. Hedgerow planting

    c. Leave odd areas of grain for food patches near good wildlife cover.

    d. Leave crop residues standing on surface over winter.

    e. Delay mowing or use of flushing bar in cover crops or grassed waterways to reduce bird losses.

    f. Include a greater diversity of crops in rotation.

    g. Plant crops in narrow strips.

  3. Use of proper amounts of fertilizer to reduce contamination of surface waters.

  4. Proper agricultural waste disposal.

C. Additional treatment necessary to improve national economic development (standard of living).

  1. On wet soils (except types 3 through 20 wetlands as described in USDI Fish and Wildlife Circular 39).

    a. Drainage field ditch or subsurface drain.

    b. Land smoothing.

  2. Apply supplemental irrigation water where available and practical.

  3. Other cultural and management measures that contribute to increasing net income such as fertilizing and liming for optimim productions; and green chop forage.

  4. Fee hunting.

RESOURCE MANAGEMENT SYSTEMS

for

IRRIGATED CROPLAND

Definition - Land used primarily for the production of adapted cultivated or close-growing crops for harvest alone or in association with sod crops for which adequate irrigation water is available.

Suitable Soils - In general, suitable soils include those in capability classes I through IV, under irrigation, and with certain intensive treatments capability classes VI and VII.

Primary Resources - Soil, water, plants

Objectives -

A. Essential treatment to protect the resource base.

1. Practices that are essential to meet quality standards:

   a. CONSERVATION CROPPING SYSTEM.

   b. IRRIGATION WATER MANAGEMENT.

   c. IRRIGATION SYSTEMS - DRIP, SPRINKLER OR SURFACE AND SUBSURFACE.

2. Practices that may be essential to meet quality standards:

   a. That will dispose of surface water runoff at nonerosive velocities. (May include, but are not limited to, terrace, diversion, grassed waterway or outlet, grade stabilization structure.)

   b. That will reduce soil movement by wind or water to within tolerable limits established for each soil. (May include, but are not limited to, terrace, diversion, contour farming, strip cropping, crop residue managment, minimum tillage, field windbreak, and subsurface drain.)

   c. That will result in soil conditioning rating indices of 0.0 or above.

B. Additional treatment necessary to improve environmental quality.

1. Reduce soil loss to a level below the tolerable limit by more intensive application of erosion control practices. (May include, but are not limited to, combinations of terraces, diversion, contour farming, stripcrooping,crop residue management, minimum tillage, field windbreak, and subsurface drain.)

2. Improve wildlife habitat with:

   a. Field borders

   b. Hedgerow planting

    c. Leave odd areas of grain for food patches near good wildlife cover.

    d. Leave crop residues standing on surface over winter.

    e. Delay mowing or use of flushing bar in cover crops or grassed waterways to reduce bird losses.

    f. Include a greater diversity of crops in rotation.

    g. Plant crops in narrow strips.

3. Use of proper amounts of fertilizer to reduce contamination of surface waters.

4. Proper agricultural waste disposal.

C. Additional treatment necessary to improve national economic development (standard of living.)

1. On wet soils (except types 3 through 20 wetlands are described in USDI Fish and Wildlife Circular 39):

    a. Drainage field ditch or subsurface drain.

    b. Land smoothing.

2. Other cultural and management measures that contribute to increasing net income such as fertilizing and liming for optimum production and green chop forage.

3. Fee hunting.

RESOURCE MANAGEMENT SYSTEMS

for

PASTURELAND

Definition - Land used primarily for the production of adapted domesticated forage plants to be grazed by livestock. (Seed crops harvested.)

Suitable Soils - In general, suitable soils are those in capability classes I through VI and as shown with a pastureland suitability group designation.

Primary Resources - Soil, water, plants

Objectives -

A. Essential treatment to protect the resource base.

1. Practices that are essential to meet quality standards:
    - a. PASTURE MANAGEMENT
    - b. PASTURE PLANTING On land being converted to this use or reseeded.
    - c. WELL, POND, or other adequate water supply.
2. Practices that may be essential to meet quality standards:
    - a. That will dispose of surface water runoff at noneorsive velocities. (May include, but are not limited to, diversion, grade stabilization structure.)
    - b. That will reduce soil movement by wind or water to within tolerable limits established for each soil.
    - c. That will result in soil conditioning rating indices of 0.0 or above.

B. Additional treatment necessary to improve environmental quality.

1. Timing and placement of fertilizer application (or manure), which results in a minimum contamination of surface and ground water.
2. Rotation grazing.
3. Hedgerow planting.
4. Improve wildlife habitat -
    - a. Leave clumps of shade trees.
    - b. Fence water areas to exclude livestock.
    - c. Wildlife watering facility.
5. Proper agricultural waste disposal.

C. Additional treatment necessary to improve national economic development (standard of living.)

1. Fertilize for optimum growth.
2. Pasture planting - Where a change in species will increase income.
3. Timely harvest for optimum feed value.
4. Apply supplemental irrigation water where available.

RESOURCE MANAGEMENT SYSTEMS

for

NATIVE GRAZING LAND

Definition - Land used primarily for production of native forage plants maintained or manipulated primarily through grazing management. Includes rangeland and grazeable woodland.

Rangeland-Land on which the native vegetation (climax or natural potential plant community) is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing use. Rangeland includes natural grassland, savannas, many wetlands, some deserts, tundra, and certain forb and shrub communities.

Grazable Woodland - Forest land that produces, at least periodically, sufficient understory vegetation suitable for forage that can be grazed without significantly impairing wood production and other forest values.

Suitable Soils - All soils that have plant communities suitable for grazing, mostly in land capability classes IV through VII.

Primary Resources - Soil, water plants

Objectives -

A. Essential treatment to protect the resource base.

   1. Practices that are essential to meet quality standards:

      a. PROPER GRAZING USE.

      b. WELL, POND, SPRING DEVELOPMENT or other adequate water supply.

   2. Practices that may be essential to meet quality standards:

      a. That will dispose of surface water runoff at nonerosive velocities. (May include, but are not limited to, planned grazing system, grade stabilization structure, water bars, on access roads, diversion, brush management, range seeding.)

      b. That will reduce soil movement by wind or water to within tolerable limits established for each soil. (May include, but are not limited to, planned grazing system, critical area planting, debris basin, salting, firebreak, fencing, range seeding, streambank protection.)

B. Additional treatment necessary to improve environmental quality.

   1. Planned grazing system.

   2. Reduce soil loss to a level below the tolerable limit by more intensive application of erosion control practices. (These may include, but are not limited to, fencing, range seeding,

critical area planting, debris basin, and stream channel stabilization.)

3. Improve wildlife food, water, and cover by habitat management. (This may include brush management, tree planting, wildlife watering facility, and stream corridor management.)

C. Additional treatment necessary to improve national economic development (standard of living).

1. Access roads.
2. Brush management.
3. Stock trails or walkways.
4. Prescribed burning.
5. Develop water for livestock dispersal by adding pipelines and troughs.
6. Range seeding.
7. Firebreaks.
8. Fertilization.

RESOURCE MANAGEMENT SYSTEMS

for

WOODLAND

Definition - Land used primarily for the production of adapted wood crops and to provide tree cover for watershed protection, beautification, etc. Does not include farmstead and feedlot windbreaks or field windbreaks.

Suitable Soils - A. All soils in woodland suitability groups.
B. For watershed protection - all soils types.

Primary Resources - Soil, water, plants

Objectives -

A. Essential treatment to protect the resource base.

1. Practices that may be required to protect the resource from fire and grazing:

   a. LIVESTOCK EXCLUSION. (Except grazable woodlands - then refer to grazing guides in Section II and Resource Management Systems for Native Grazing Land in Addition to the Woodland Resource Management Systems.)

   b. FIREBREAK

2. Practices that my be essential to meet quality standards.

   a. That will dispose of surface water runoff at nonerosive velocities. (May include, but are not limited to, diversion, grade stabilization structure.)

   b. That will reduce soil movement by wind or water to within tolerable limits established for each soil. Tree planting on land being converted to woodland from another use or where stocking level is not adequate to protect the site. Critical area planting is an alternate practice on eroding areas.

   c. All harvesting and slash disposal will conform to the Oregon Forest Practices Act.

B. Additional treatment necessary to improve environmental quality.

1. Woodland improved harvesting.

   a. Utilized all material possible in the harvesting operation - avoid leaving cull trees and excessive amount of slash.

   b. Where consistent with good silviculture, perform light harvest cuttings which leave the forest intact.

   c. Protect desirable uncut trees, seedlings, and shrubs by careful felling, skidding, and hauling practices.

d. Clean up all unsightly refuse, tin cans, and discarded equipment.

e. Create openings for wildlife.

f. Leave two or three den trees per acre and three or four mast trees per acre.

2. Woodland improvement.

a. Enhance aesthetic qualities of the landscape by developing vistas and emphasizing topographic features.

b. Cut up slash and severely damaged trees so they lie close to the ground.

c. Seed edges of roads and trails to plants beneficial to woodland wildlife.

3. Access roads.

Protect the site against erosion by proper logging procedures including well planned skid and haul road layout, and adequate water drainage facilities.

C. Additional treatment necessary to improve national economic development (standard of living.)

Take advantage of opportunities to provide fee hunting. This may necessitate provision of additional access roads and trails.

1. Woodland improved harvesting

2. Woodland improvement

3. Woodland pruning

RESOURCE MANAGEMENT SYSTEMS

for

URBANIZING LAND

Definition - Land used or being developed for residence, commerce, industry and community services.

Suitable soils - Refer to the soil survey interpretation sheets in Section II of this Technical Guide for suitable soils for specific uses and facilities.

Primary Resources - Soil, water

Objectives -

A. Essential treatment to protect the resource base.

1. Practices to protect human life and maintain environmental quality.

a. Flood prevention measures that will prevent or reduce damages from flooding to a one-percent chance. Measures may be structural, nonstructural or any combination thereof.

b. Land Grading-Urban Areas-Including auxiliary practices for safe disposal of runoff water and subsurface drains.

c. CRITICAL AREA PLANTING

d. Approved water supply.

e. Approved sewage and waste disposal systems.

2. Practices that may be essential to meet quality standards:

a. That will dispose of surface water runoff at nonerosive velocities. (May include, but are not limited to, diversion, grassed waterway or outlet, grade stabilization structure, debris basin.)

b. That will reduce soil movement by wind or water to within tolerable limits established for each soil. (May include, but are not limited to, diversion, mulching, heavy use area protection.)

B. Additional treatment necessary to improve environmental quality.

1. Environmental planting.

2. Preserve natural vegetation when and where possible.

3. Site selected in accordance with comprehensive plan to provide for compatible adjacent areas.

4. Adequate parks and open space.

C. Additional treatment necessary to improve national economic development (standard of living).

Planned unit development in accordance with comprehensive plan and local subdivision regulations.

RESOURCE MANAGEMENT SYSTEMS

for

SURFACE MINE AREAS

Definition - Land which has been, is now being, or will be disturbed by mining activities, such as quarries, borrow pits, and sand and gravel operations.

Primary Resources - Soil, water

I. Land which has been mined -

A. Essential treatment to protect the resource base.

1. Soil materials capable of producing vegetation:

a. The erosion tolerance (T) shall not exceed 5 tons per acre per year. The soil erodibility factor (K) shall be determined by on-site imspection of the soil materials.

b. All toxic effluents shall be contained, retained, or neutralized on site.

c. Also refer to Resource Management Systems for the suitable intended land use.

2. Soil materials incapable of producing vegetation:

a. Conservation practices shall be installed to either retain surface water runoff on site or dispose of it at nonerosive velocities as it leaves the mined land.

b. All toxic effluents shall be contained, retained, or neutralized on site.

B. Additional treatment necessary to improve environmental quality.

1. Critical area planting - Including addition of topsoil.

2. Hedgerow planting.

C. Additional treatment necessary to improve national economic development (standard of living).

1. Restore site to highest possible productive use.

2. Refer to Resource Management System for that use.

II. Land being mined -

A. Essential treatment to maintain sustained use of the resource base.

Treatment and restoration shall equal or exceed the requirements of applicable state laws.

III. Land to be mined -

See Resource Management Systems for present land use.

STREAM MANAGEMENT SYSTEMS

for

STREAMS and RIVERS

Definition - Any waterway that carries natural runoff either continuously or intermittently.

Suitable Soils - Not applicable.

Primary Resources - Soil, water

Objectives -

A. Essential treatment to protect the resource base.

Land use and treatment to control erosion, sedimentation and pollution (Refer to appropriate Resource Management Systems Sections III-A through III-M).

B. Additional treatment necessary to improve environmental quality.

1. Streambank protection.
2. Stream channel stabilization.
3. Grade stabilization structure.
4. Clearing and snagging.
5. Fish stream improvement.

C. Additional treatment necessary to improve national economic development (standard of living).

1. Establishment of facilities to attract and accomodate paying recreationists including fishing access fees.

WASTE MANAGEMENT SYSTEMS

for

WASTE UTILIZATION AND DISPOSAL

Definition - Use and disposal of wastes without adversely affecting soil, water or related resources.

Suitable Soils - Refer to soil interpretation sheets in Section II of this Technical Guide.

Primary Resources - Soil, water

Objectives -

A. Essential treatment to protect the resource base and improve environmental quality.

1. AGRICULTURAL WASTE MANAGEMENT SYSTEM. (May need AGRICULTURAL WASTE STORAGE FACILITY and/or DISPOSAL LAGOON.)

2. Solid Waste Disposal System (must meet state and local regulations). Practices needed may include, but are not limited to, diversion, grassed waterway, subsurface drain, critical area planting. (When no longer used as disposal area, refer to Sections III-A through III-J for essential practices for new land use.)

3. Sewage Disposal System (must meet state and local regulations).

   a. Subsurface - Sewage sludge (same as 2 above).

   b. Surface - Sewage sludge and effluent.

      1) Dry - spread and incorporate in same manner as animal waste.

      2) Wet - spread and incorporate in same manner as animal waste. Also refer to Irrigated Cropland, Irrigated Pastureland, and Irrigated Hayland Resource Management Systems.

APPENDIX 1-3A

EXAMPLES OF SOIL CONSERVATION SERVICE NATIONAL PRACTICE STANDARDS

Critical Area Planting

Debris Basin

Planning Grazing Systems

Terrace, Gradient

Tree Planting

SOIL CONSERVATION SERVICE

CRITICAL AREA PLANTING (Ac.)

Definition

Planting vegetation such as trees, shrubs, vines, grasses, or legumes on critical areas. (Does not include tree planting mainly for wood products.)

Purpose

To stabilize the soil; reduce damage from sediment and runoff to downstream areas; improve wildlife habitat; and enhance natural beauty.

Where applicable

On sediment-producing, highly erodible or severely eroded areas, such as dams, dikes, mine spoil, levees, cuts, fills, surface-mined areas, and denuded or gullied areas where vegetation is difficult to establish with usual seeding or planting methods.

Specifications Guide

Species of grasses, legumes, shrubs, and trees; rates of seeding or planting; fertilizer and lime requirements; planting site preparation; time of planting; mulching; and irrigation.

SOIL CONSERVATION SERVICE

DEBRIS BASIN (No.)

Definition

A barrier or dam constructed across a waterway or at other suitable locations to form a silt or sediment basin.

Purpose

To preserve the capacity of reservoirs, ditches, canals, diversions, waterways, and streams; to prevent undesirable deposition on bottomlands and developed areas; to trap sediment originating from construction sites; and to reduce or abate pollution by providing basins for deposition and storage of silt, sand, gravel, stone, agricultural wastes, and other detritus.

Conditions Where Practice Applies

This practice applies where physical conditions or land ownership preclude the treatment of the sediment source by the installation of erosion control measures to keep soil and other material in place, or a debris basin offers the most practical solution to the problem.

Specifications Guide

Specifications shall be in keeping with this standard and shall describe the requirements for proper installation of the practice to achieve its intended purpose. Refer to National Engineering Handbook, Section 2.

SOIL CONSERVATION SERVICE

PLANNED GRAZING SYSTEMS (Ac.)

Definition

A system in which two or more grazing units are alternately rested from grazing in a planned sequence over a period of years, and the rest period may be throughout the year or during the growing season of the key plants.

Purpose

(1) To maintain or speed up improvement in plant cover while properly using the forage on all grazing units; (2) to improve efficiency of grazing by uniformly using all parts of each grazing units; (3) to insure a supply of forage throughout the grazing season; (4) for watershed protection; and (5) to enhance wildlife habitat.

Where Applicable

On all rangeland, native pasture, grazable woodland, and grazed wildlife land.

Planning Considerations

(1) The specific grazing system to choose depends on size, number of grazing units, climate, range sites or other soil grouping and conditions, kinds of grazing animals and the operator's objectives; (2) each system must be tailored to help meet the operator's objectives; (3) each system must be able to be applied practically and flexible enough to meet the needs of key plants in relation to climatic fluctuations while providing forage throughout the grazing season; (4) fences and watering facilities must be carefully considered in terms of adequacy and costs in relation to the benefits expected from the total system; and (5) special provisions for prolonged drought or other unusual circumstances should be included.

Specifications Guide

For each type of system recognized locally (1) the number and size of grazing units; (2) the schedule and frequency of rest from grazing for each unit; and (3) how much use is planned on each unit grazed.

SOIL CONSERVATION SERVICE

TERRACE, GRADIENT (Ft.)

Definition

An earth embankment or a ridge and channel constructed across the slope at a suitable spacing and with an acceptable grade.

Scope

This standard covers the planning and design of gradient terraces. It does not apply to diversions.

Purpose

Gradient terraces are constructed to reduce erosion damage and pollution by intercepting surface runoff and conducting it to a stable outlet at a nonerosive velocity.

Conditions Where Practice Applies

Gradient terraces normally are limited to cropland having a water erosion problem. They shall not be constructed on deep sands or on soils that are too stony, steep, or shallow to permit practical and economical installation and maintenance. The topography must be such that farmable terraces can be constructed. Gradient terraces may be used only where suitable outlets are or will be made available.

Specifications Guide

Specifications shall be in keeping with this standard and shall describe the requirements for proper installation of the practice to achieve its intended purpose. Refer to National Engineering Handbook, Section 2.

SOIL CONSERVATION SERVICE

TREE PLANTING (Ac.)

Definition

Planting tree seedlings or cuttings.

Purpose

To establish or reinforce a stand of trees to conserve soil and moisture; beautify an area; protect a watershed; or produce wood crops.

Where applicable

In open fields, in understocked woodland, beneath less desirable tree species, or on other areas suitable for producing wood crops; where erosion control or watershed protection is needed; where greater natural beauty is wanted; or where a combination of these is desired.

Specifications Guide

Adapted tree species for the purposes outlined; site preparation; spacing; planting methods; cultural practices and maintenance requirements that are applicable; and the variations in methods, species, etc., between interplanting, underplanting, and planting in open areas. Specifications can be developed separately for each of these planting methods.

APPENDIX 1-3B

EXAMPLES OF TECHNICAL STANDARDS AND SPECIFICATIONS

Critical Area Planting

Contour Farming

Debris Basin

Conservation Cropping System

Disposal Lagoon

Source: Soil Conservation Service

TECHNICAL STANDARDS AND SPECIFICATIONS

FOR

CRITICAL AREA PLANTING

(SURFACE MINE SPOIL)

STANDARD

Definition:

Planting vegetation such as trees, shrubs, vines, grasses, or legumes on surface mine spoil areas.

Purpose:

To stabilize such areas so as to reduce damages from erosion, sediment and runoff; to improve such areas as cuts and fill slopes for safety, beautification and wildlife habitat; to restore such areas to other land uses as appropriate.

Where Applicable:

On spoil and disturbed areas resulting from surface mining operations.

PLANNING CONSIDERATIONS

These reclaimed areas should be made compatible and complementary to areas adjacent to these lands. Finding suitable soil that will support plant growth may be difficult on these areas. Topsoiling may not be required if suitable soil material can be brought to the surface by regrading and shaping.

Critical conditions for reclamation generally exist on land which has been mined without benefit of prior reclamation planning. The objective in vegetating surface mine spoil should be to stabilize the area with permanent, protective, and productive vegetative cover as quickly as possible.

SPECIFICATIONS

A. Site Treatment and Preparation

New Mines - Conduct surface mining operations in a manner so that the soil resource can be recovered, conserved, and utilized.

Reclamation of Existing Mines - Conduct shaping, smoothing, and other neccessary operations which will permit the use of conventional equipment to establish and maintain vegetation.

1. New Mines

   Remove and stockpile the topsoil or other upper suitable soil material prior to beginning the mining operation. Reshape the area mined and spread topsoil back over the area. Enough soil material will be restored to assure satisfactory plant establishment, usually a minimum of 6 inches or the equivalent of the original topsoil material.

   Existing Mines

   There may not be any existing topsoil left on existing mines. Topsoiling under the conditions outlined above may not be possible. If topsoiling is not possible, then begin site treatment and preparation as outlined in item 2.

2. Grade and shape the area to permit the use of conventional equipment for seedbed preparation, fertilizing, seeding, mulching, and maintenance. Consideration should be given to leaving water areas for recreation or for wildlife enhancement where applicable and desired.

3. All high walls, spoil piles and banks will be shaped to 4:1 slopes or slopes of lesser grade.

4. Toxic soil material that will interfere with plant growth will be handled according to Water Quality Board regulations. Toxic soil material placed at a depth greater than 3 feet and covered with suitable soil material generally does not interfere with plant growth.

5. Use necessary soil ammendments which will permit establishment of desired plants; i.e., lime, gypsum, etc.

6. Dams, retention reservoirs, diversions, terraces, etc., will be used to control runoff or excess water. These will meet SCS specifications and will be installed in accordance with a developed plan.

B. Temporary Vegetation - Use on any bare or denuded areas which may be subject to erosion for 6 months or more prior to the establishment of a finished grade and permanent vegetation. The temporary vegetation establishment will be coordinated with the permanent erosion control measures planned to assure compatible, economical and effective plant establishment and erosion control.

1. Seedbed Preparation

   a. If the soil material is firm but not compacted and smooth enough for planting, and has not been sealed by rainfall, no seedbed preparation may be required. If soil is loose, it will be made firm by a cultipacker or suitable equipment.

   b. When the soil has been sealed by rainfall or compacted by heavy equipment, the area will be chisel plowed to a minimum depth of 4 inches followed with a tandem disk and cultipacker to smooth and firm.

   c. Apply fertilizer and soil ammendments as required. Secure soil test when possible, otherwise use appropriate Field Office Technical Guides for: Fertilizer, Liming, Toxic Salt Reduction.

2. Planting Methods

   a. Seed will be planted by an appropriate drill, cyclone seeder or hand.

   b. The areas will be firmed with a cultipacker, roller or drag following seeding.

3. Lime and Fertilizer

   a. Use a current soil test or standards and specification for fertilizer, liming, or soil amendments as found in the Field Office Technical Guides.

   b. On reasonably fertile soils or soil material, no fertilizer is required.

   c. On soils with low fertility, apply fertilizer according to a soil analysis or Field Office Technical Guide. Apply just prior to the tandem disking specified under seedbed preparation. If seedbed preparation is not required, apply fertilizer just prior to the planting operation.

4. Species, Seeding Rates and Dates

Species	Planting Depth	Planting Rate	Planting Date
Oats	1 - 2 in.	4 bu/ac	9/1 - 11/30
Rye (Cereal)	1 - 2 in.	2 bu/ac	9/1 - 11/30
Gulf Coast ryegrass	1/4 - 3/4 in.	24 lbs/ac	9/1 - 11/30
Millet (German)	1 - 2 in.	40 lbs/ac	4/1 - 6/15
Sudan (Common)	1 - 2 in.	30 lbs/ac	4/1 - 8/31
Arrowleaf clover	1/2 - 3/4 in.	20 lbs/ac	9/15 - 10/31
Vetch	1/2 - 3/4 in.	40 lbs/ac	9/15 - 10/31
Singletary peas	1/2 - 3/4 in.	70 lbs/ac	9/15 - 10/31

A variation of 25 percent above or below the specified planting rates is allowable. For planning purposes 100 percent of the recommended rate will be used. Where a mixture is used, reduce seeding rates proportionally. Innoculate all legumes planted with the proper innoculant.

C. Permanent Vegetation

1. Seedbed Preparation - All plantings will be made on a well prepared firm seedbed free of competing vegetation. Where feasible all operations will be done on the approximate contour. This will require one or more of the following operations:

a. Break with a moldboard plow, offset disk, or disk breaking plow and disk with a tandem disk, double cut by making two passes over the area, followed with a cultipacker, roller or other suitable equipment to provide a firm seedbed.

Or

b. Disk with a weighted tandem disk to a depth of 3 to 4 inches, double cut by making two passes over the area with the disk, followed with a cultipacker, roller or other suitable equipment to provide a firm seedbed.

Or

c. Chisel plow to a minimum depth of 4 inches and disk with a weighted tandem disk to a depth of 3 to 4 inches and double cut by making two passes over the area, followed with a cultipacker, roller or other suitable equipment to provide a firm seedbed.

Or

d. Use a heavy disk type plow. Follow this with a tandem disk to smooth the area. Use a cultipacker, roller or other suitable equipment to provide a firm seedbed.

2. Planting Methods

a. For Seeded Grasses or Legumes

(1) Seed will be drilled on the approximate contour into a firm seedbed. A grass seed drill equipped with depth control bands will be used. The seed will be distributed over the entire area at a uniform rate. The area will be firmed immediately following seeding with a cultipacker, roller or similar equipment if the grass drill is not equipped with a press wheel.

Or

(2) Seed with a grain drill with a small seed attachment into a firm seedbed. Care should be taken with this method not to get the seed planted too deep. After planting, firm seedbed with a cultipacker, roller or similar equipment.

Or

(3) Seed will be broadcast with a cyclone type seeder over the entire area at a uniform rate. This method is adapted

to small areas. The area will be firmed immediately before and following seeding with a cultipacker, roller or similar equipment.

b. For Sprigged Grasses

(1) Sprigs will be planted uniformly with a sprig planter 2 to 3 inches deep. The distance between rows will not exceed 20 inches.

(2) A manure spreader or other suitable equipment may be used to plant sprigs uniformly. Immediately following distribution the sprigs will be covered with a disk to a depth of 2 to 3 inches and the planting will be smoothly finished and compacted with a cultipacker.

(3) Small, irregular or odd areas inaccessible to sprig planter may be planted and covered by hand.

3. Species, Seeding Rates and Dates

a. Grasses 1/

Adapted Plants	Planting Depth	Seeding Rate Per Acre	Seeding Date
Bermuda seed	1/4 - 1/2 in.	4.6 lbs. (PLS)	3/15 - 5/15
Bermuda sprigs 2/	1 - 3 in.	24 bu/ac	1/15 - 5/31 3/
Weeping lovegrass	1/2 - 3/4 in.	4 lbs. (PLS)	3/1 - 5/31
Native bluestem mixture	1/2 - 3/4 in.	6.8 lbs. (PLS)	2/1 - 5/15
King Ranch bluestem	1/2 - 3/4 in.	2.4 lbs. (PLS)	2/1 - 5/15
Pensacola bahiagrass	1/2 - 3/4 in.	30 lbs. (PLS)	10/1 - 5/15

1/ A variation of 25 percent above or below the optimum seeding rate is allowed. For planning purposes the rates as shown will be used.

2/ On critical areas where shaping is involved and concentrations of outside or excess water cannot be cut out during establishment, or where slope and soils are a special problem, 48 bushels of sprigs may be used.

3/ Sprigs must be from dormant plants on early winter sprigging.

b. Legumes

Adapted Plants	Planting Depth	Seeding Rate Per Acre	Seeding Date
Crimson clover 4/	1/2 - 3/4 in.	20 lbs/ac	4/15 - 6/1
Arrowleaf clover 4/	1/2 - 3/4 in.	6 lbs/ac	4/15 - 6/1
Sericea lespedeza	1/2 - 3/4 in.	40 lbs/ac	4/15 - 6/1
Ball clover 4/	1/2 - 3/4 in.	3 lbs/ac	9/15 - 10/31
Vetch 4/	1/2 - 3/4 in.	15 lbs/ac	9/15 - 10/31
Singletary peas 4/	1/2 - 3/4 in.	25 lbs/ac	9/15 - 10/31

c. Spacing between rows of woody plants will be as follows:

(1)	Between two rows of low growing shrubs	6-8 ft.
(2)	Between two rows of tall growing shrubs	8-12 ft.
(3)	Between a row of low growing shrubs and tall growing shrubs	8-12 ft.
(4)	Between a row of low growing shrubs and a row of trees	10-16 ft.
(5)	Between a row of tall shrubs and a row of trees	15-20 ft.
(6)	Between two rows of trees	10-20 ft.

d. Trees should be planted in a multiple row planting with one or more rows of shrubs. Shrubs should be included in each mott planting.

e. Woody plantings for wildlife cover must be established in conjunction with grass, preferably a bunch grass selected from Section 3(a). Woody plantings for rural beautification may be established with either bunch or sod grasses.

4/ Will be used only where a mixture of grass and a legume is desired. The approved grasses may be overseeded with one of the legumes listed.

f. Woody plantings for wildlife cover may be planted on the entire area, in scattered motts or large areas, or in border plantings. This should be determined by the size of the area, type of vegetation surrounding the area and need for woody plants to enhance wildlife habitat.

4. Selection of Plants to be Used

a. Where the area is to be grazed after establishment, with an adjoining unit, the grass or grasses selected should be the same as, or have approximately the same palatability and season of use as, those already present on the adjoining unit.

b. Where the area will be used principally for wildlife after establishment, plant species should be selected which will control erosion and have a high value as either/or wildlife food and cover. Shrub and tree plantings should be included with grass plantings where woody type wildlife cover is deficient.

c. Where rural beautification is one of the major considerations in treating a critical area, woody plants should be selected which will add variety to the scenery and beauty to the general area. This will normally be a multiple row planting of shrubs and trees, with selection based on flowering characteristics, growth form desired, evergreen plants, etc., which will enhance the appearance of the area.

5. Fertilizer - Fertilizers applied on critical areas in range or wildlife lands should be fenced as a separate unit or pastures deferred until the critical areas are established. Fertilizers will be applied in accordance with a current soil test or in accordance with the specifications for Fertilizing, Field Office Technical Guide, Section IV.

a. Barnyard manure or chicken litter may be used for fertilization when the equivalent plant nutrients in the material used equal the fertilizer requirements as specified above. See specifications for Fertilizer in Field Office Technical Guide.

6. Management of Vegetation

a. Weed Control - Control weeds by mechanical or chemical control methods. Weed control by mowing will be done in such a manner that it will control the weeds but will not damage the planned vegetation. Where litter from mowed weeds is dense enough to kill grass, it will be removed. See specifications for Weed Control in Field Office Technical Guide.

b. Protect from fire and vehicle traffic.

c. Frequent inspections should be made for adequate stand during establishment and at least annually for maintenance.

d. Where protection is needed during the establishment period, temporary fences will be used. No grazing will be allowed during the establishment period.

7. Water Control

a. Where feasible, divert runoff water from critical area until vegetation is established.

b. Diversion terraces, grade stabilization structures, and other practices planned as part of Critical Area Planting must be installed in accordance with the Field Office Technical Guides for these practices.

CONTOUR FARMING (AC.)

Definition

Farming sloping cultivated land in such a way that plowing, preparing land, planting and cultivating are done on the contour. (This includes following established grades of terraces or diversions. Do not report on same area where contour stripcropping is reported.)

Purpose

To reduce erosion and control water.

Where Applicable

On sloping cropland and on recreation and wildlife land where other cultural and management practices in the cropping system do not control soil and water loss.

Specifications

1. Where either terraces or diversions exist, they will be used as guides for tillage operations.

2. When the above practices do not exist, guidelines shall be laid out as nearly on the contour as feasible. Row grades shall not deviate from the actual contour more than 2 percent for distance of 150 feet in any direction. Deviations shall be used for only smoothing out curves which cross draws and ridges.

3. Perform all major tilling, planting, and cultivating within the above guides.

4. Guidelines shall be spaced so that cultural operations can be carried out without exceeding the above specifications.

Desirable Measures for Contouring

1. To facilitate more efficient use of equipment, terraces, diversions, and contour guidelines should be laid out parallel when possible.

2. Correction areas should be planted and maintained in sod.

3. Field roads should be planned and built where they will be least likely to receive and convey runoff water.

(END)

ENGINEERING STANDARD

DEBRIS BASIN

Definition:

A barrier or dam constructed across a water way or at other suitable locations to form a silt or sediment basin.

Purpose:

To preserve the capacity of reservoirs, ditches, canals, diversions, waterways, and streams; to prevent undesirable deposition on bottomlands and developed areas; to trap sediment originating from construction sites; and to reduce or abate pollution by providing basins for deposition and storage of silt, sand, gravel, stone, agricultural wastes, and other detritus.

Conditions Where Practice Applies:

This practice applies where physical conditions or land ownership preclude the treatment of the sediment source by the installation of erosion control measures to keep soil and other material in place, or a debris basin offers the most practical solution to the problem.

Design Criteria:

The capacity of a debris basin shall equal the volume of sediment expected to be trapped at the site during the planned useful life of the structures or improvements it is designed to protect. The minimum capacity shall be for a ten year period at the rate of 0.01 inch per year per acre of drainage area. Construction area minimum storage capacity should be on a two year period. Where it is determined that periodic removal of debris will be practicable, the capacity may be proportionately reduced.

The design of dams, spillways and drainage facilities shall be in accordance with the standards of Ponds, Grade Stabilization Structures or Engineering Memorandum No. 27, as appropriate for the class and kind of structure being considered. Less conservative requirements may be used for small, temporary basins, that will be in place only during a short development or construction period.

In urban and built-up areas, means of draining and maintaining a dry pool between periods of use shall be incorporated in the design and plans.

Safety measures to protect the public from the hazards of soft sediment and floodwater are to be established as conditions dictate.

CONSTRUCTION SPECIFICATION

FOR

DEBRIS BASIN

Scope. All plans and specifications will be in keeping with the standard for debris basin and shall describe the work and requirements for proper installation of the sediment basin.

Construction operations shall be carried out in such a manner that erosion, air, water and noise pollution will be minimized and held within legal limits as established by State regulations.

Completed jobs shall present a workmanlike finish and be pleasing to the eye.

Construction. The debris basin shall be constructed to achieve its intended purpose. Construction of structures within the scope of Engineering Memorandum 27 shall be in accord with the Guide Specifications contained in the specifications for contracts, SCS South.

Structures below the scope of Engineering Memorandum 27 shall be applied under construction specifications applicable to Pond, Code 378 or have specifications prepared by the Area Engineer and approved by the State Conservation Engineer.

CONSERVATION CROPPING SYSTEM (AC.)

Definition

Growing crops in combination with needed cultural and management measures. Cropping systems include rotations that contain grasses and legumes as well as rotations in which the desired benefits are achieved without the use of such crops.

Purpose

To improve or maintain good physical conditions of the soil; protect the soil during periods when erosion usually occurs; help control weeds, insects, and diseases; and meet the need and desire of farmers for an economic return.

Where Applicable

On all cropland and on certain recreation and wildlife land.

Specifications

1. Alternative minimum crop sequences and treatments, by Class and Sub-class, will conform to the following:

   a. Class I and Sub-classes IIw, IIs, and IIIw

      (1) Continuous row cropping with the crop residue returned.

      (2) Continuous row cropping with crop residue removed and cover crop grown and used for green manure.

      (3) Continuous double cropping with residue from one crop returned.

   b. Sub-class IIIs with slopes 2 percent or less and Sub-class IVw

      (1) Continuous row cropping with crop residue returned.

      (2) Continuous row cropping with crop residue removed and cover crop grown and used for green manure.

c. All "e" Sub-class soils and "s" Sub-classes with more than 2 percent slopes

To determine crop sequences and treatment measures, use the Universal Soil Loss Equation, Section III. The planned system shall not exceed by more than 25 percent the tolerance established for the dominant soil in the field.

2. Grassed waterways or outlets will be essential on all "e" Sub-class soils in water concentration areas. Waterways are desirable when minimum tillage is used.

3. Follow specifications in 510 - Pasture and Hayland Planting, when establishing grassland crops that are part of the conservation cropping system, they shall meet the following requirements.

a. Use adapted crops such as vetches, winter peas, clovers, small grains and annual grasses. Quick growing perennials such as tall fescue, orchardgrass and weeping lovegrass may be used. Do not use slow growing plants such as sericea and bahiagrass.

b. Apply fertilizer and lime according to soil test or use field rates as shown in Plant Guide.

c. Plant on a properly prepared seedbed. See Plant Guide for type of seedbed that is needed for the plant(s) used.

d. Use field seeding rates and plant during the time recommended in the Plant Guide.

e. When plants have served their usefulness as a cover crop, they shall be incorporated into the soil, partly incorporated into it, or retained on the soil surface.

(END)

ENGINEERING STANDARD

DISPOSAL LAGOON

Definition

An impoundment made by constructing an excavated pit, dam, embankment, dike, levee, or combination of these for biological treatment of organic waste. (This standard does not include holding ponds and tanks.)

Scope

This standard establishes the minimum acceptable quality for design and construction of anaerobic and aerobic disposal lagoons located in predominantly rural or agricultural areas. Design of aerobic disposal lagoons will be under the direction of the State Conservation Engineer.

Purpose

Lagoons are constructed to biologically decompose organic animal waste by action of aerobic or anerobic bacteria.

Condition Where Practice Applies

General

This practice applies where there is need for facilities to process concentrated organic waste, reduce sources of pollution, minimize health hazards, and improve the local environment. These facilities are not intended for disposal of animal carcasses.

State Law

Alabama laws, rules and regulations established by the Alabama Health Department and Water Improvement Commission, and local regulations governing use of disposal lagoons will be strictly adhered to. The land user will be responsible for securing necessary permits. If discharge is being considered, the Water Improvement Commission should be consulted at an early stage.

Design Criteria

Disposal lagoons are of three types depending on the type of bacterial action that takes place--anaerobic, aerobic, or facultative (a combination of the first two). Anaerobic lagoons often produce strong odors, though many of them produce very little noticeable odor. Aerobic lagoons are generally expected to be odorless, though overloading or slug loading usually can be expected to produce bad odors. Anaerobic lagoons require smaller area per animal and for this reason are usually favored for treatment of animal waste.

Aerobic lagoons normally do a more complete job of stabilizing oxygen demand of the waste than do the anaerobic lagoons. However, even a system of one lagoon of each type in series, properly designed, cannot be expected to produce an effluent with much better quality than fresh domestic sewage. Thus, the most desirable thing to do with any lagoon effluent is to put it on the land.

Lagoons must be designed as a part of a total waste disposal system. Provision must be made by management to prevent overflow into water courses. Where overflow is planned, multiple stage treatment must be provided to bring the effluent to an acceptable quality for discharge, and discharge must first be approved by the appropriate authorities.

All designs for anaerobic disposal lagoons must be approved by the area engineer. All aerobic lagoon designs will be made by an engineer, and final approval will be made by the State Conservation Engineer, except those used to contain overflow from an anaerobic lagoon.

Location

The site should be located adjacent to or near the source of waste. When possible, it is desirable to locate the lagoon first and then position the buildings. It should be as far from inhabited homes as practical with a recommended minimum distance of 300 feet. Summer prevailing winds should be considered so the lagoon may be located to prevent odors from being carried toward the residential locations.

The lagoon must be located so that runoff from outside the animal waste area does not enter the lagoon. When outside runoff from an area is not excluded, capacity must be increased to contain the total annual runoff from the area. The lagoon must be a minimum of 150 feet away and downhill from wells used for domestic water supply. It is desirable to have the lagoon 500 feet or more away from the water supply. The lagoon should be located to permit gravity drainage of waste to the lagoon.

Soil and Foundation

Site soil characteristics will be investigated by borings at a representative number of points over the area. The investigation will be made well below the planned lagoon bottom. The lagoon bottom should be watertight.

Lagoons must be in impervious soils or soils suitable for sealing. Sites in very sandy soils or in shallow soils overlying fractured rock or cavernous limestone must be avoided to prevent contamination of ground-water. Soils in regions where fractured limestone exists must be sealed with at least 24 inches of compacted clay material before using the lagoon. Sandy soil will be treated with 12 inches of compacted clay material, an approved liner or a combination of these.

Water Supply

Sufficient water supply must be available to fill the lagoon half full before loading and to maintain it after operation starts.

Shape

The shape of the lagoon should be uniform and essentially square or rectangular. If it is rectangular, the long side should not be more than three times the length of the short side. The lagoon bottom must be approximately level to prevent formation of septic pockets.

Depth

The minimum average depth of liquid storage space will be six feet with an additional two feet of freeboard above the maximum waterline. Greater depth of liquid storage will improve lagoon efficiency, reduce maintenance and removal of accumulated sludge.

Dike or Embankment

Top width - The minimum top width is eight feet to allow for equipment travel. Side slopes - Steep bank slopes below waterline discourage weed growth.

Side slopes inside the lagoon will be no steeper than 1:1 in CH CL and MH soil and 2:1 on all other soils. When required to facilitate construction, a ramp may be used or one end may be flattened.

Flat bank slopes above the waterline make mowing and maintenance easier. Use minimum 2½:1 side slopes on dikes and/or fills outside the designed water surface.

Dikes or fills must be thoroughly compacted and constructed in such a manner as to provide a watertight structure.

Allowance for Settlement

The designed height of the embankment shall be increased by the amount needed to insure that the design top elevation will be maintained after settlement has taken place. This increase shall not be less than 5 percent.

Size

Refer to Appendix A for sizing lagoon.

Inlet Pipe

Vitrified clay sewer (bell joints), cast iron pipe, or weather resistant PVC or ABS plastic pipe having a minimum diameter of six inches will be used as an inlet pipe and be laid on a minimum grade of one foot per 100 feet. When animal waste is pumped, the pipe diameter may be reduced to not less than three inches. The inlet pipe must be well supported and extend well beyond the slope toe and preferably to near the center of the lagoon. The pipe should be laid above the designed water surface except for plastic pipe. It is recommended that PVC and ABS plastic pipe be covered a minimum of six inches with either water or soil to extend its expected life. Enough wye fittings should be placed in the line to facilitate easy cleanout.

Support posts will be set to a minimum depth of three feet below the ground in concrete. Post hole diameter must be 2½ times the post diameter for a durable post installation.

Inlet Ramps

When pipe inlets are not feasible or practical, concrete or treated wood ramps can be used to transmit waste into the lagoon. These shall be installed in accordance with the design prepared for each site. Available standard ramp designs may be used.

Overflow Outlet

Discharge from the overflowing lagoon will be piped to a second lagoon, a holding pond, a tile disposal field, a diversion, or irrigated to the land for disposal. In no case shall a one-cell (stage) lagoon be discharged directly into a stream. The overflow pipe must be installed so that water is discharged from a minimum of six inches below the surface when the design water level is reached. An elbow, turn down, or tee section on the inlet to the overflow pipe may be used for this purpose. It is to be vented, located away from the corners, where accumulation of floating material is the heaviest.

Materials

All pipes, pipe fittings, and appurtenances used will be inspected by the SCS technician and a determination made as to whether the material meets applicable reference specifications. Materials should be new and meet the requirements of the reference specifications for the type of material used as follows:

a. Cast iron pipes and fittings - ASTM A-377
b. Vitrified clay - ASTM C-425
c. Structural timber and lumber - ASTM D-245
d. Plastic pipe and fittings (PVC) ASTM D-2241, 2464, or 2468
e. Plastic pipe and fittings (ABS) ASTM D-2282, 2465, or 2469

Materials evaluated and found to not meet the requirements of the specifications or otherwise found not suitable for the use intended, shall not be used.

Protection

The lagoon is to be fenced to keep out unauthorized persons and livestock. Warning signs should be posted and the gate kept locked. The fence will be designed and located to facilitate removal of sludge, mowing and maintenance of the structure.

Vegetation

Suitable vegetation must be established on the embankment and surrounding areas to protect them from erosion. A vegetative plan or written recommendation for vegetative treatment will be made for all disturbed areas.

Plans

Plans for a lagoon must show pertinent features such as dimensions, location, and details of inlet and outlet structures. They should be accompanied by an engineering report fully discussing the proposed project, particularly soil conditions and factors (SCS-ENG-538) influencing aesthetic conditions. Specifications must cover all materials, equipment, and methods of construction.

Lagoon Management

The following are considerations in managing a lagoon:

a. Fill the new lagoon with surface or roof runoff or with well water.

b. A lagoon functions best if waste is added daily. If daily loading is impractical, load as often as possible. Large loadings at irregular intervals can cause a lagoon to malfunction.

c. The manure must not contain bedding. Bedding can plug sewer lines and is slow to decompose.

d. Maintain water at the designed level for good bacterial action. Solids must be covered with water at all times.

e. The lagoon will accumulate sludge because anaerobic digestion is not complete. Periodic sludge removal will be required to restore lagoon to its designed volume. It is best to remove at least some sludge every year.

f. Sludge can be removed by pumping from bottom of lagoon with liquid manure equipment and then field spreading. The lagoon also can be taken out of operation, pumped empty, allowed to dry, and the sludge removed mechanically. This method requires a recovery period before the lagoon returns to normal bacterial activity. Sludge may be pumped into an irrigation system. Special sprinklers are available for handing sludge.

g. Mosquito breeding can be controlled by adding diesel fuel or larvacide.

h. If lagoon water does not evaporate fast enough to prevent overflow of dike, another lagoon should be added. A series of lagoons may be designed to produce a treated waste safe for discharge into a stream if established water quality standards permit.

CONSTRUCTION SPECIFICATION

FOR

DISPOSAL LAGOON

Scope. This item shall consist of the clearing, excavation, backfill, concrete, and other appurtenances required for the construction of a disposal lagoon and the disposal of all cleared and excavated materials. Construction shall be carried out in such a manner that erosion, water, air and noise pollution will be minimized and held within legal limits as established by state regulations.

Clearing. All trees, brush, and stumps shall be removed from the site and spoil areas before excavation is performed. All material cleared from the area shall be disposed of by burning or removing from the site and stacking. All burning shall conform to regulations of Alabama state law.

Excavation. The completed excavation, berms, and placed banks (spoil disposal) of waste material shall conform to lines, dimensions, grades and slopes shown on the plans or staked on the site to the degree that skillful operation of the excavating equipment will permit. Runoff from outside drainage areas will be diverted away from the lagoon.

Dike or Levee Construction. The placing and spreading of fill material shall be started at the lowest point of the foundation and shall be brought up in approximately horizontal layers not exceeding eight inches in thickness. These layers shall be of approximately uniform elevation and shall extend over the entire area of fill. Construction equipment will be operated over the area of each layer in a manner that will result in a specified degree of compaction and a watertight structure. Special construction equipment will be used when the required compaction cannot be obtained by routing of the construction equipment. Construction of the fill shall be undertaken only at such times that the moisture content of the fill material will permit satisfactory compaction. If the material is too dry, moisture must be added.

Pipe Installation. Inlet pipe or troughs shall be placed to the lines and grades shown on the plans.

Ramp Installation. When used, inlet ramp shall be constructed to the dimensions, lines, and grades shown on the plans or as otherwise specified.

Materials. All of the component parts of the inlet pipe and supports shall be as specified on the plans and shall be installed in a workmanlike manner.

Concrete. This work shall consist of furnishing, forming, placing, finishing and curing portland cement concrete as required in the construction of the work. When concrete is used, the mixture shall be no less than a 5-bag per yard mix. Water content shall not exceed 6.0 gallons per sack. Concrete will be thoroughly rodded or vibrated to remove voids and densify the concrete.

Small batch mixture shall be as follows: A standard brand Type I Portland cement, washed sand and gravel. Clean water shall be used in the mix. (Suggested ration of aggregates in mix: 94 lbs. cement (1 bag), 6 gals. water, 170 lbs. clean dry sand, 315 lbs. dry gravel. Smaller batches, 1 part cement, 2 parts sand, and 3 parts gravel, and water at the rate of 1 gal. per 16 lbs. of cement).

Concrete shall not be placed when the atmospheric temperature may be expected to fall below 40°F. at the time concrete is delivered and placed at the work site.

All exposed surfaces of concrete shall be protected from the direct rays of the sun for at least the first 7 days. All concrete shall be cured by keeping it continuously moist for at least 7 days after placement. This moist curing can be accomplished by spraying with two coats of curing compound when other concrete will not be bonded to the treated surface.

Vegetation. Vegetative treatment shall be established as specified or as shown on the plans. Vegetation shall be applied as critical area planting and will include seedbed preparation, seeding, liming, fertilizing, and mulching. The lagoon shall be fenced when all construction work is completed.

TABLE III - DESIGN CHART FOR SIZING LAGOONS

WATER DEPTH = 6 FEET

SIDE SLOPES = 2:1 1/

Waterline Dimensions		Bottom Dimensions		Volume to Waterline	
Width Ft.	Length Ft.	Width Ft.	Length Ft.	Cubic Ft.	Cubic Yds.
40	40	16	16	4,992	185
40	45	16	21	5,827	216
40	50	16	26	6,656	247
40	60	16	36	8,304	307
50	50	26	26	8.952	332
50	60	26	36	11,223	416
40	80	16	56	11,578	429
50	70	26	46	13,483	499
60	60	36	36	14,112	523
50	80	26	56	15,739	583
60	70	36	46	16,986	629
60	80	36	56	19,854	735
50	100	26	76	10,338	750
70	80	46	56	23,948	887
60	100	36	76	25,575	947
80	80	56	56	28,032	1,038
60	120	36	96	31,289	1,159
80	100	56	76	36,182	1,340
90	100	56	76	41,469	1,536
80	120	56	96	44,319	1,641
100	100	76	76	46,752	1,732
80	140	56	116	52,451	1,942
100	125	76	101	59,943	2,220
80	160	56	136	60,579	2,243
100	150	76	126	73,122	2,708
100	175	76	151	86,295	3,196
100	200	76	176	99,464	3,684
150	150	126	126	114,552	4,243
100	250	76	226	125,796	4,659
150	200	126	176	155,938	5,776
150	250	126	226	197,307	7,308
100	200	176	176	212,352	7,865
150	300	126	276	238,670	8,840
200	300	176	276	325,125	12,042
200	400	176	376	437,873	16,218

1/ The volumes in these tables apply to lagoons constructed with 1:1 side slopes below waterline.

TABLE IV - DESIGN CHART FOR SIZING LAGOONS

WATER DEPTH = 8 FEET SIDE SLOPES = 2:1 1/

Waterline Dimensions		Bottom Dimensions		Volume to Waterline		Waterline Dimensions		Bottom Dimensions		Volume to Waterline	
Width Ft.	Length Ft.	Width Ft.	Length Ft.	Cubic Ft.	Cubic Yds.	Width Ft.	Length Ft.	Width Ft.	Length Ft.	Cubic Ft.	Cubic Yds.
40	40	8	8	5,291	196	90	100	58	68	50,405	1,867
40	45	8	13	6,231	231	80	120	48	88	53,796	1,992
40	50	8	18	7,148	265	100	100	68	68	56,988	2,111
40	60	8	28	8,953	332	80	140	48	108	64,010	2,371
50	50	18	18	9,931	368	100	125	68	93	73,907	2,737
50	60	18	28	12,623	468	80	160	48	128	74,225	1,749
40	80	8	48	12,513	463	100	150	68	118	90,504	3,352
50	70	18	38	15,283	566	100	175	68	143	107,262	3,973
60	60	28	28	16,170	599	100	200	68	168	124,105	4,597
50	80	18	48	17,928	664	150	150	118	118	143,970	5,332
60	70	28	38	19,675	729	100	250	68	218	157,536	5,835
60	80	28	48	23,157	858	150	200	118	168	197,895	7,329
50	100	18	68	23,194	859	150	250	118	218	150,902	9,293
70	80	38	48	28,320	1,049	200	200	168	168	270,852	10,032
60	100	28	68	30,090	1,114	150	300	118	168	304,927	11,294
80	80	48	48	33,450	1,239	200	300	168	268	417,684	15,470
60	120	28	88	37,003	1,370	200	400	168	368	565,737	20,953
80	100	48	68	43,664	1,617						

1/ The volumes in these tables apply to lagoons constructed with 1:1 side slopes below waterline.

TABLE V - DESIGN CHART FOR SIZING LAGOONS

WATER DEPTH = 10 FEET SIDE SLOPES = 2:1 1/

Waterline Dimensions		Bottom Dimensions		Volume To Waterline		Waterline Dimensions		Bottom Dimensions		Volume Waterline	
Width Ft.	Length Ft.	Width Ft.	Length Ft.	Cubic Ft.	Cubic Yd.	Width Ft.	Length Ft.	Width Ft.	Length Ft.	Cubic Ft.	Cubic Yd.
50	50	10	10	10,333	383	100	100	60	60	65,333	2,420
50	60	10	20	13,360	495	80	140	40	100	73,480	2,271
50	70	10	30	16,366	606	100	125	60	85	85,504	3,167
60	60	20	20	17,368	643	80	160	40	120	85,504	3,167
50	80	10	40	18,884	700	100	150	60	110	105,166	2,895
60	70	20	30	21,376	792	100	175	60	135	125,584	4,651
60	80	20	40	25,384	940	100	200	60	160	145,624	5,393
50	100	10	60	25,394	940	150	150	110	110	170,674	6,321
70	80	30	40	31,396	1,163	100	250	60	210	185,704	6,878
60	100	20	60	32,944	1,220	150	200	110	160	235,260	8,713
80	80	40	40	37,408	1,385	150	250	110	210	300,934	11,146
60	120	20	80	41,416	1,534	200	200	160	160	325,984	12,073
80	100	40	60	49,272	1,825	150	300	110	260	366,064	13,558
90	100	50	60	57,333	2,123	200	300	160	260	506,344	18,753
80	120	40	80	61,141	2,265	200	400	160	360	684,940	25,368

1/ The volumes in these tables apply to lagoons constructed with 1:1 side slopes below waterline.

TABLE VI - DESIGN CHART FOR SIZING LAGOONS

WATER DEPTH = 12 FEET SIDE SLOPES = 2:1 1/

Waterline Dimensions		Bottom Dimensions		Volume to Waterline		Waterline Dimensions		Bottom Dimensions		Volume to Waterline	
Width Ft.	Length Ft.	Width Ft.	Length Ft.	Cubic Ft.	Cubic Yd.	Width Ft.	Length Ft.	Width Ft.	Length Ft.	Cubic Ft.	Cubic Yd.
60	60	12	12	17,856	661	100	125	52	77	94,314	3,493
60	70	12	22	22,176	821	100	150	52	102	117,216	4,341
60	80	12	32	26,496	981	100	175	52	127	140,016	5,186
70	80	22	32	33,216	1,230	100	200	52	152	162,816	6,030
60	100	12	52	34,236	1,268	150	150	102	102	192,816	7,141
80	80	32	32	39,936	1,470	100	250	52	202	208,416	7,719
60	120	12	72	43,776	1,621	150	200	102	152	268,416	9,941
80	100	32	52	53,250	1,972	150	250	102	202	344,016	12,741
90	100	42	52	62,496	2,315	200	200	152	152	374,016	13,852
80	120	32	72	66,816	2,475	150	300	102	252	419,616	15,541
100	100	52	52	71,616	2,652	200	300	152	352	795,713	29,471
80	160	32	112	92,628	3,430						

1/ The volumes in these tables apply to lagoons constructed with 1:1 side slopes below waterline.

APPENDIX 1-4

SAMPLE CONSERVATION PLANS

Conservation Plan for a Developing Area

Conservation Plan for an Individual Cooperator

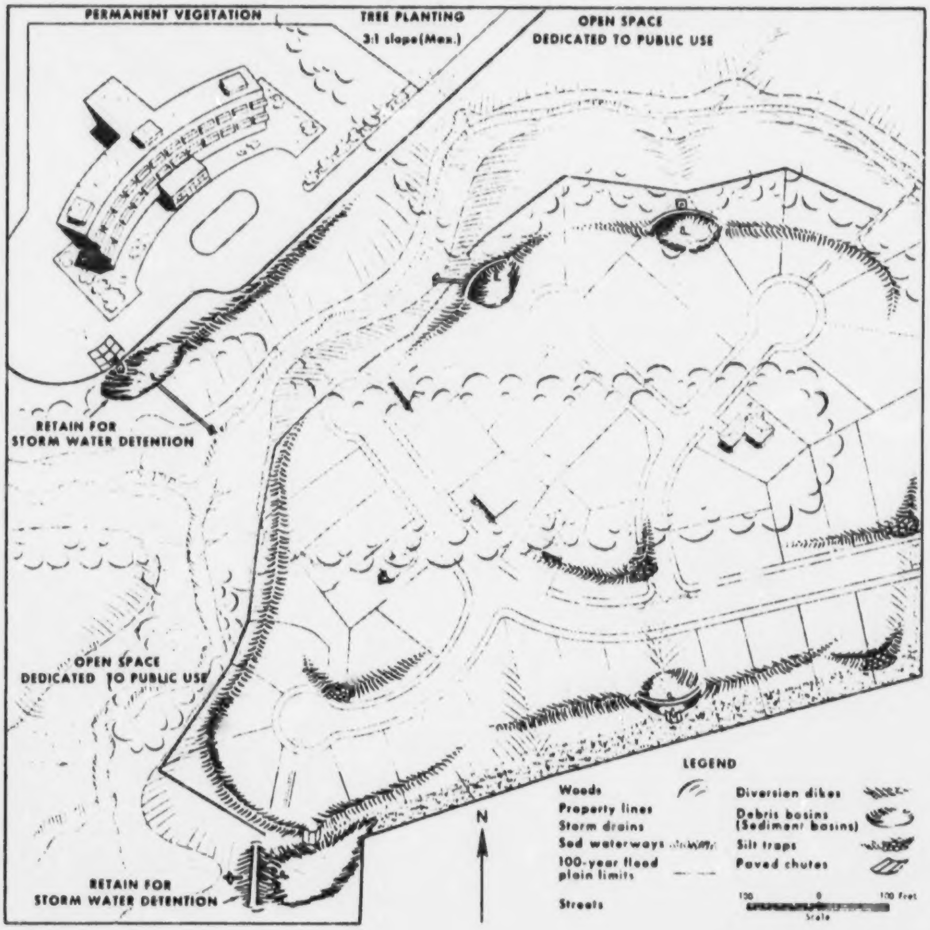
Source: Soil Conservation Service

A CONSERVATION PLAN ...for a developing area

Increasingly, farms, forests, and other open spaces are being converted to urban uses. Land disturbance associated with residential, industrial, and commercial developments and supporting activities (building streets, sewer lines, power transmission lines, airports) contributes to a serious nationwide problem of soil erosion and sediment damage. More than 25,000 tons of soil may be eroded from a square mile of developing area and find its way into marshes, streams, ponds, rivers, lakes, and marine estuaries. Silted ponds, lakes, and reservoirs have less room to store storm water, and thus water supplies are damaged and flood hazards increased. Government and industry spend millions of dollars to remove sediment from water to be used in homes, hospitals, and factories. Sediment destroys spawning grounds for fish and is a health hazard because disease germs, pesticides, and other unwanted materials attached to it are transported from one community to another.

Throughout the Nation, a "quiet revolution" is underway. Many villages, towns, townships, cities, and counties are enacting ordinances or issuing rules and regulations designed to protect the public from unnecessary and destructive soil erosion and sedimentation. In many areas, conservation plans

Planned land use and conservation treatment


PERMANENT VEGETATION
TREE PLANTING
3:1 slope(Max.)
OPEN SPACE
DEDICATED TO PUBLIC USE
RETAIN FOR
STORM WATER DETENTION
OPEN SPACE
DEDICATED TO PUBLIC USE
RETAIN FOR
STORM WATER DETENTION
N
LEGEND
Woods
Property lines
Storm drains
Sod waterways
100-year flood plain limits
Streets
Diversion dikes
Debris basins (Sediment basins)
Silt traps
Paved chutes
100
0
100 Feet
Scale

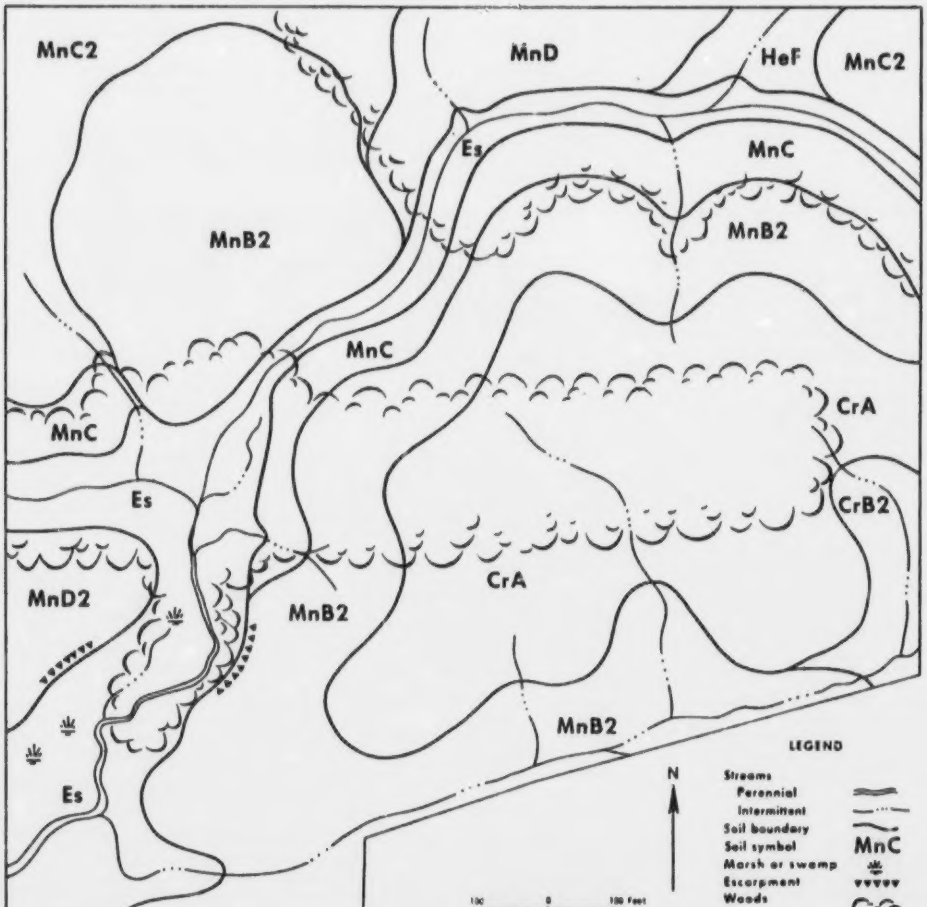
must be prepared by developers and approved by conservation districts before land-disturbing permits are granted. Such conservation plans show, for instance, how a housing developer will use his land and control erosion and sedimentation during and after construction.

Soil surveys provide developers information on the location and extent of the different kinds of soil in an area and show the soil limitations for selected uses. Once the soil limitations are known, streets, homes, utilities, and other kinds of construction often can be planned on selected soils that are stable, dry, and generally free of problems. In some places soils with moderate or severe limitations must be used. Soil interpretations show the kinds of soil problems so that engineers and developers can investigate them in detail and plan and design structures to reduce or overcome them. In this way, decisions can be made early about selecting areas for specific uses and maintenance costs can be held to a minimum. Constructing homes and other buildings on desirable soils increases opportunities for landscaping with a variety of plants, both for beauty and to control erosion.

A conservation plan shows the steep land that is to be protected with vegetation. Waterways are preserved and protected, and recreation areas are located on suitable sites. Land subject to overflow from streams also is preserved and protected to curtail flooding and to provide additional open space for wildlife and recreation.

Equally important, a conservation plan shows the location of conservation measures, such as dikes, water diversions, terraces, dams, reservoirs, water

Soil map


MnC2
MnD
HeF
MnC2
Es
MnC
MnB2
MnB2
MnC
CrA
MnC
Es
CrB2
MnD2
MnB2
CrA
MnB2
Es
N
LEGEND
Streams
Perennial
Intermittent
Soil boundary
Soil symbol
MnC
Marsh or swamp
Escarpment
Woods
100
0
100 Feet
Scale

Reproduced from best available copy.

conduits, grassed waterways, and plantings of grass, trees, and shrubs. A plan accounts for the timing and sequence of installing conservation measures in order to provide for maximum control of erosion and sedimentation.

The Plan

This example of a developer's conservation plan for a housing development provides for an attractive environment based on careful use of soil, water, and plant resources. The plan is based on interpretations of the soils in the area. A pictorial map is used here to show the developer's plan. More often, however, a plat map that shows topography, lot measurements, street widths, and other features is used.

Detailed designs of conservation measures, although not shown in this example, are a necessary part of conservation plans. Designs must comply with standards and specifications adopted by the governmental entity that has responsibility for review and approval.

Conservation plans for developing areas that have different climate, soils, and topography require different land use and conservation measures. For example, in some areas a high water table is as great a problem as erosion and sedimentation.

Conservation plans can be prepared by engineers, developers, building contractors, or other technically qualified resource planners. If needed, SCS technical assistance can be made available through the local soil conservation district.

Legend and soil descriptions

Symbol	Soil	Brief description
CrA CrB2	Crosby silt loam, 0 to 2 percent slopes Crosby silt loam, 2 to 6 percent slopes, eroded	Light-colored to moderately dark colored, deep, somewhat poorly drained, slowly permeable soils on nearly level to gently sloping areas in uplands. Developed from firm glacial till.
Es	Eel silt loam	Moderately dark colored, deep, moderately well drained, moderately permeable soils on nearly level areas in bottom lands. Developed from friable alluvium.
HeF	Hennepin soils, 18 to 35 percent slopes	Light-colored, deep, well-drained, moderately permeable soils on steep slopes in uplands. Developed from firm glacial till.
MnB2 MnC MnC2 MnD MnD2	Miami silt loam, 2 to 6 percent slopes, eroded Miami silt loam, 6 to 12 percent slopes Miami silt loam, 6 to 12 percent slopes, eroded Miami silt loam, 12 to 18 percent slopes Miami silt loam, 12 to 18 percent slopes, eroded	Light-colored, deep, well-drained, moderately permeable soils on gentle slopes to moderately steep slopes in uplands. Developed from firm glacial till.

Soil interpretations

Symbol	Soil	Erosion hazard	Dwellings–three stories or less		Septic tank absorption fields	Location of roads and streets	Parks or nature trails
			With basement	Without basement			
CrA	Crosby	Slight	Severe; wetness	Moderate; wetness	Severe; wetness	Moderate; wetness	Moderate; wetness
CrB2	Crosby	Moderate; sheet erosion	Severe; wetness	Moderate; wetness	Severe; wetness	Moderate; wetness	Moderate; wetness
Es	Eel	Moderate; streambank erosion	Severe; floods	Severe; floods	Severe; floods	Severe; floods	Moderate; floods
HeF	Hennepin	Severe; sheet and gully erosion	Severe; slope	Severe; slope	Severe; slope	Severe; slope	Severe; slope
MnB2	Miami	Moderate; sheet erosion	Slight	Slight	Slight	Slight	Slight
MnC, MnC2	Miami	Severe; sheet and gully erosion	Moderate; slope	Moderate; slope	Moderate; slope	Moderate; slope	Moderate; slope
MnD, MnD2	Miami	Severe; sheet and gully erosion	Severe; slope	Severe; slope	Severe; slope	Severe; slope	Severe; slope

Soil limitation classes–Soils rated as SLIGHT have few or no limitations for the use. Soils rated as MODERATE have limitations that reduce to some degree their desirability for the purpose being considered. They require some corrective measures. Soils rated as SEVERE have unfavorable soil properties or features that severely restrict their use and desirability for the purpose. A severe rating does not mean that the soil cannot be used for a specific purpose because many of the problems can be corrected.

Land use

The land use pattern proposed by this developer contributes to control of erosion and sedimentation and to maintenance of the environmental and esthetic values of this area.

1. The flood plain and adjacent steep slopes are reserved for public use. Trails or other projects for recreation or environmental improvement may be developed by the local unit of government.
2. Public access lanes connect each street with the open space dedicated to public use.
3. Storm sewers carry street and lot runoff to stable outlets or water-detention reservoirs.
4. Street patterns conform to land contours and are designed for pedestrian safety and abatement of traffic noises.
5. Building lots are laid out to conform to the contours of the land in order to reduce land disturbance.
6. The area is platted so that a maximum number of lots share the wooded sectors.
7. Natural water courses are preserved and protected.

Measures to control erosion and sedimentation

To control erosion and sedimentation in this area during and after construction, the developer agrees to:

1. Disturb only the areas needed for construction. At the present time, natural vegetation covers this area and there is little erosion. The streambed and streambanks are stable. The vegetation on the flood plain and adjacent slopes will contribute to the esthetic and environmental quality of the development.
2. Remove only those trees, shrubs, and grasses that must be removed for construction; protect the rest to preserve their esthetic and erosion-control values.
3. Stockpile topsoil and protect it with anchored straw mulch.
4. Install sediment basins and diversion dikes before disturbing the land that drains into them. Diversion dikes in the central part of the development may be constructed after streets are installed but before construction is started on the lots that drain into them.
5. Install streets, curbs, water mains, electric and telephone cables, storm drains, and sewers in advance of home construction.
6. Install erosion- and sediment-control practices as indicated in the plan and according to soil conservation district standards and specifications. The practices are to be maintained in effective working condition during construction and until the drainage area has been permanently stabilized.
7. Temporarily stabilize each segment of graded or otherwise disturbed land, including the sediment-control devices not otherwise stabilized, by seeding and mulching or by mulching alone. As construction is completed, permanently stabilize each segment with perennial vegetation and structural measures. Both temporary and permanent stabilization practices are to be installed according to soil conservation district standards and specifications.
8. "Loose-pile" material that is excavated for home construction purposes. Keep it "loose-piled" until it is used for foundation backfill or until the lot is ready for final grading and permanent vegetation.
9. Stabilize each lot within 4 months after work starts on home construction.
10. Backfill, compact, seed, and mulch trenches within 15 days after they are opened.
11. Level diversion dikes, sediment basins, and silt traps after areas that drain into them are stabilized. Establish permanent vegetation on these areas. Sediment basins that are to be retained for storm-water detention may be seeded to permanent vegetation soon after they are built.
12. Discharge water from outlet structures at nonerosive velocities.
13. Design and retain two debris basins as detention reservoirs so that peak runoff from the development area is no greater than that before the development was established.

A CONSERVATION PLAN

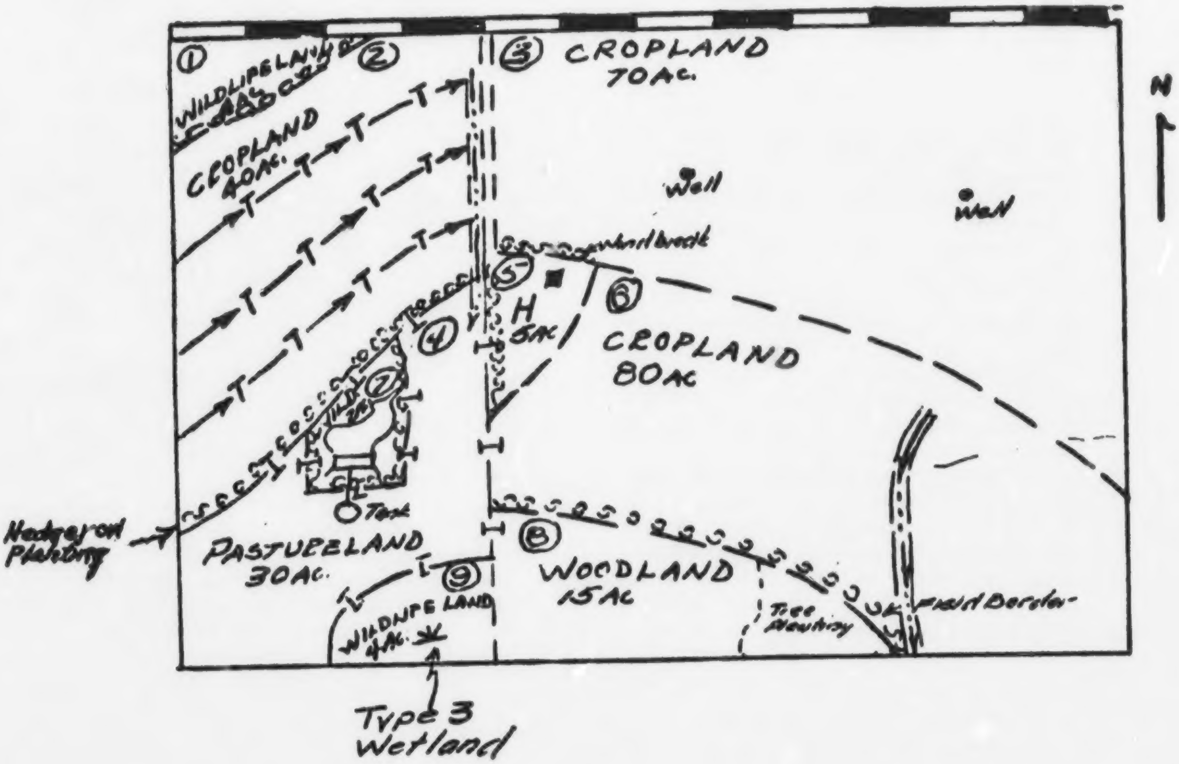
FOR INDIVIDUAL COOPERATOR

SCS-CONS-16
OCTOBER 1974

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

CONSERVATION PLAN MAP

Owner John X. Smith Operator Same
County Clay State Any Date 2-6-76
Approximate acres 250 Approximate scale 8 inches = 1 mile
Cooperating with Clay County Soil Conservation District
Plan identification LTA No. 12 Photo number 3F57
Assisted by Jake Snow USDA Soil Conservation Service


①
WILDLIFE LAND 1 AC
②
CROPLAND 40AC.
③ CROPLAND 70AC.
N
Well
Well
windbreak
⑤
H 5AC
⑥
CROPLAND 80AC
④
⑦
2AC
Tank
Hedgerow Planting
PASTURELAND 30AC.
⑨
WILDLIFE LAND 4AC.
⑧
WOODLAND 15AC
Tree Planting
Field Border
Type 3 Wetland

USDA-SCS
SCS-CONS-88
REV. 7-72

CONSERVATION PLAN
FOR INDIVIDUAL COOPERATOR

RECORD OF COOPERATOR'S DECISIONS
AND PROGRESS IN APPLICATION

COOPERATOR John X. Smith
ASSISTED BY Jake Snow
DATE 3 - 11 - 76

Page 1 of 6

FIELD NO.	PLANNED		APPLIED		LAND USE AND TREATMENT
	AMOUNT	YEAR	AMOUNT	MONTH AND YEAR	
					CROPLAND - 190 Ac.
2,3,6	190 Ac.	-			CONSERVATION CROPPING SYSTEM:
2,3	110 Ac.	1977			- Lime and fertilizer will be applied according to University soil tests.
6	80 Ac.	1979			
2,3	110 Ac.	-			- Continuous Row Crop *
6	80 Ac.	-			- Cropping sequence: R-R-G-H *
6	80 Ac.	-			- Hay (H) will be established.
					* Hay or small grain may be substituted for row crop for less intensive cropping system.
2,3,6	190 Ac.	-			MINIMUM TILLAGE:
2,3	110 Ac.	1977			- Chisel plow and one disking will be used except for seedbed preparation following hay in field 6 (Use moldboard plow, disk twice).
6	80 Ac.	1979			
					** No-till may be substituted.
2,3,6	190 Ac.	-			CROP RESIDUE USE:
2,3	110 Ac.	1977			- Residue will be left standing with no seedbed preparation until April 1. The disk will be angled to leave a minimum of 3000 pounds of residue on the surface.
6	80 Ac.	1979			
2	6600 Ft.	1978			PARALLEL TERRACES:
					- Terraces will be installed according SCS design.
					- Terraces will be maintained
					NOTE: Soil survey map would ordinarily be included as part of the plan materials.

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SCS-CONS-05
REV. 7-72

COOPERATOR John X. Smith
ASSISTED BY Jake Snow
DATE 3 - 11 - 76

RECORD OF COOPERATOR'S DECISIONS AND PROGRESS IN APPLICATION

Page 2 of 6

FIELD NO.	PLANNED		APPLIED		LAND USE AND TREATMENT
	AMOUNT	YEAR	AMOUNT	MONTH AND YEAR	
2,6	120 Ac.	-			CONTOUR FARMING:
6	80 Ac.	1977			- Seedbed preparation and planting will be on the contour.
2	40 Ac.	1978			
6	5 Ac.	1977			GRASSED WATERWAY: - Will be installed and seeded according to SCS design.
2	2650 Ft.	1979			HEDGEROW PLANTING: - Will be planted according to Planting Plan No.2. Will be cultivated 1st year.
6	1600 Ft.	1978			FIELD BORDER: - Border will be planted according to Planting Plan No. 2. Will be cultivated 1st year.
3	70 Ac.	1976			IRRIGATION SYSTEM - SPRINKLER: - Will be converted to sprinkler system according to design approved by SCS. (2100 Ft. - 12" Pipe)
3	70 Ac.	1977			IRRIGATION WATER MANAGEMENT: - Irrigation will be according to Water Management Plan developed by SCS.

USDA-SCS
SCS-CONS-68
REV. 7-72

COOPERATOR John X. Smith
ASSISTED BY Jake Snow
DATE 3 - 11 - 76

RECORD OF COOPERATOR'S DECISIONS AND PROGRESS IN APPLICATION

Page 3 of 6

FIELD NO.	PLANNED		APPLIED		LAND USE AND TREATMENT
	AMOUNT	YEAR	AMOUNT	MONTH AND YEAR	
					PASTURELAND - 30 AC
4	30 Ac.	1978			PASTURE PLANTING: - Seedbed preparation and planting will be according to Job Sheet AGR-14 (SCS). - Seed mixture 1 or 3 on Job Sheet AGR-14 (SCS) will be used.
4	30 Ac.	1978			PASTURE MANAGEMENT: - Will be managed according to Job Sheet AGR-15 (SCS). - Will not be grazed first season.
					WOODLAND - 15 Ac.
8	2 Ac.	1978			TREE PLANTING: - Loblolly Pine will be planted according to Forestry Management Plan provided by Forestry Agency.
8	15 Ac.	1977			LIVESTOCK EXCLUSION: - Fence will be repaired and maintained to keep out livestock.
					WILDLIFE LAND - 10 Ac.
7	1	1979			POND: - Pond will be installed according to SCS design. - Pond will be fenced

USDA-SCS
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RECORD OF COOPERATOR'S DECISIONS AND PROGRESS IN APPLICATION

COOPERATOR John X. Smith
ASSISTED BY Jake Snow
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FIELD NO.	PLANNED		APPLIED		LAND USE AND TREATMENT
	AMOUNT	YEAR	AMOUNT	MONTH AND YEAR	
1,7	6 Ac.	1978			WILDLIFE UPLAND HABITAT MGT: - Spot plant with District Wildlife Packet according to Planting Plan. - Protect from grazing and fire.
7	1 Ac.	1980			FISHPOND MANAGEMENT: - 100 BASS and 500 BLUEGILL FINGERLINGS will be stocked in June. - Vegetation will be controlled as outlined in Extension Bulletin 394.
9	500 Ft.	1978			DIKE: - Will be installed according to SCS design and will be operated to maintain shallow water level.
9	4 Ac.	1979			WILDLIFE WETLAND HABITAT MGT: - Tall wheatgrass (6 lbs./Ac.) and Sweet clover (2 lbs./Ac.) will be seeded outside the diked area.
7,9	1550 Ft.	1978			LIVESTOCK EXCLUSION: - Fence will be installed.

USDA-SCS
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RECORD OF COOPERATOR'S DECISIONS AND PROGRESS IN APPLICATION

COOPERATOR John X. Smith
ASSISTED BY Jake Snow
DATE 3 - 11 - 76

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FIELD NO.	PLANNED		APPLIED		LAND USE AND TREATMENT
	AMOUNT	YEAR	AMOUNT	MONTH AND YEAR	
					FARMSTEAD - 5 Ac.
5	1	1977			WASTE MANAGEMENT SYSTEM: - Approximately 500 beef steers will be fed annually (250 each 6 mo.). The solid manure will accumulate in the feedlot. The run-off will flow by gravity through the settling basin into the holding pond. - Commercial N will be reduced where manure is applied. Manure will contain about 2.8 lbs. N/Ton. - The feedlot will be shaped with 4% grade sloping NE.
5	1	1977			HOLDING POND: - A holding pond will be installed.
5	1	1977			DEBRIS BASIN: - A debris basin will be installed,
2,3,6	190 Ac.	1977			WASTE UTILIZATION: - The solid manure from the feedlot and debris basin will be spread annually at the time the seedbed for corn is prepared not to exceed 50 tons per acre.

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SCS-CONS-08
REV. 7-72

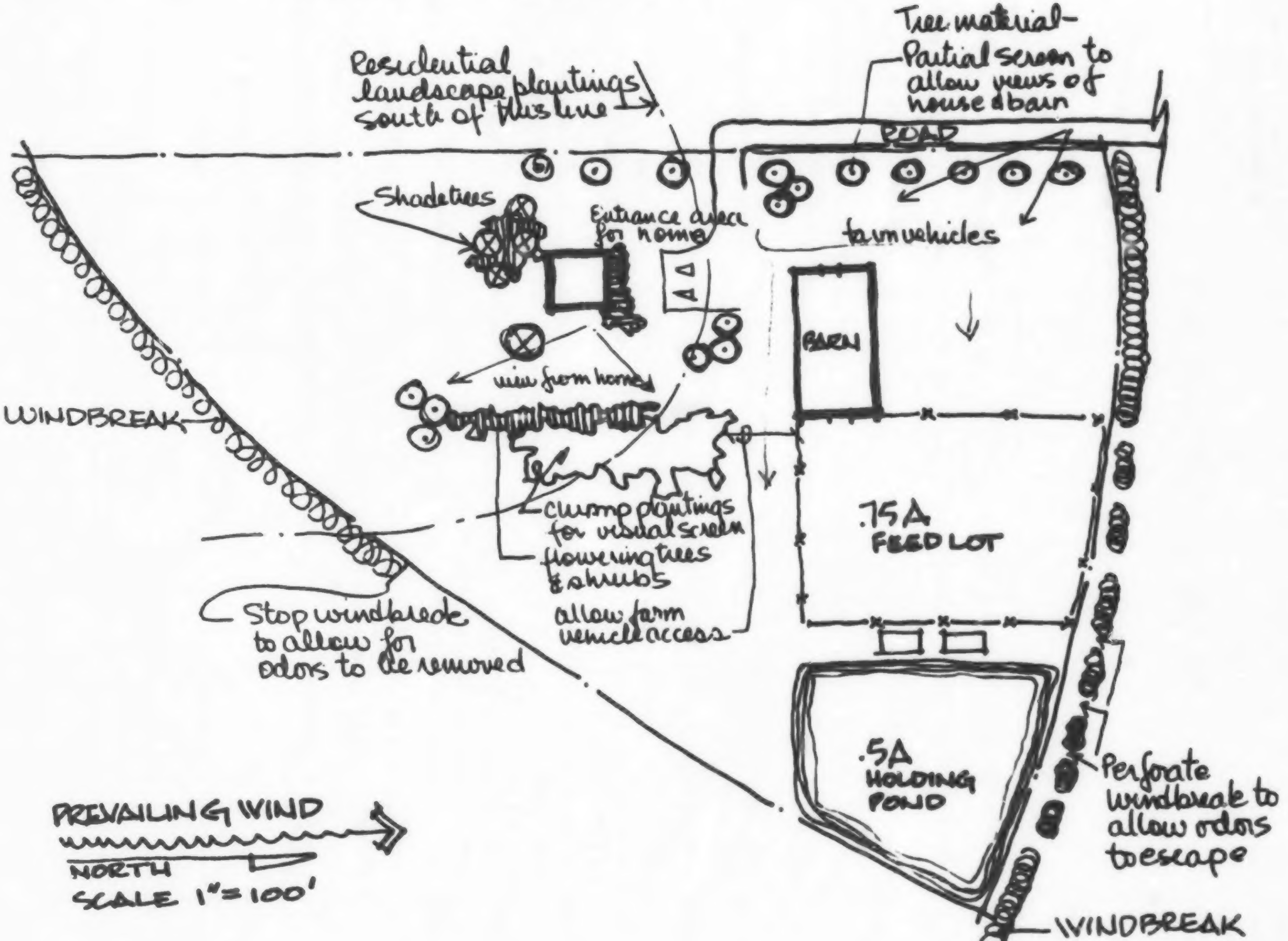
RECORD OF COOPERATOR'S DECISIONS AND PROGRESS IN APPLICATION

COOPERATOR John X. Smith
ASSISTED BY Jake Snow
DATE 3 - II - 76

Page 6 of 6

FIELD NO.	PLANNED		APPLIED		LAND USE AND TREATMENT
	AMOUNT	YEAR	AMOUNT	MONTH AND YEAR	
3	70 Ac.	1977			- The holding pond effluent will be applied to Field 3 by irrigation not to exceed 4.5" annually. Individual applications will not exceed the rate specified in the irrigation water management plan. - A centrifugal irrigation pump and big gun sprinklers specified in the design approved by SCS will be used.
					DIVERSION:
5	300 Ft.	1977			- A diversion will be constructed according to SCS design.
					FARMSTEAD WINDBREAK:
5	600 Ft.	1978			- Trees and shrubs will be planted.
5	1	1978			- The feedlot, debris basin, and holding pond will be located and landscaped according to the attached drawing titled, Farmstead Planting Plan.

FARMSTEAD PLANTING PLAN



Tree material-
Partial screen to allow views of house & barn
ROAD
Residential landscape plantings south of this line
Shade trees
Entrance area for home
farm vehicles
BARN
view from home
WINDBREAK
clump plantings for visual screen
flowering trees & shrubs
allow farm vehicle access
.75A FEED LOT
Stop windbreak to allow for odors to be removed
.5A HOLDING POND
Perforate windbreak to allow odors to escape
WINDBREAK
PREVAILING WIND
NORTH
SCALE 1"=100'

Reproduced from best available copy.

SCS-CONS-6
2-70
FILE CODE CONS-14-5

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Page 1

PLANNING AND IMPLEMENTATION NOTES

LAND USER John X. Smith

DATE AND INITIALS	NARRATIVE
J -29-76	Smith made application to CD board. Bought Paul Herd farm - 1mi S of Unionville. Interested in max. corn production, building a pond, improving irrigation system. Has erosion problems and needs to give attention to handling Animal Waste. Is interested in Conservation Plan.
RD. 2-15-76	Smith in office about sprinkler system. Needs estimate by Mar. 1st
J -27-76	Met with Smith on farm and prepared plan draft
(	Provided estimate on sprinkler system. Smith wants 3yrs of corn out of 4 in field 6 (Exceeds ~~on~~ T by 2) He questions value of chisel plow.
J 3-11-76	Smith in office discussed further erosion problems in field 6 and Animal Waste Management. ~~He~~ He agreed to 50% corn in field 6.
J -12-76	Smith called - wants to go ahead with Animal Waste System. and have it constructed by early fall.
RD 3-24-76	Set date with Smith + Area Engr. Smith all set with chisel plow
JS 4-3-76	Completed Conservation Plan and reviewed with Smith He questions need for pump to handle effluent.
J 8-1-76	Reviewed holding pond design with Smith - will start const. last of month. Wants to install terrace outlets this fall when corn is off.

CONSERVATION PLANNING CHECK LIST

1. Become aware of conservation problems related to Agricultural Waste Management and advise the decision maker during the planning process.
2. Inventory resource data related to Waste Management.
3. Review the impact of agricultural wastes as a resource (plant nutrients, soil structure, etc.) and as a pollutant of soil, water and air.
4. Determine soil limitations in recycling wastes.
5. Determine composition and production of elements from waste resource.
6. Determine N loss and soil incorporated N.
7. Determine N available for crop use for alternative systems of storage treatment, and application.
8. Determine plant nutrient balance from the most practical alternative waste management systems and discuss pros and cons with the decision maker. (Consider equipment costs, labor, climate, soils, toxicity problems, nutrient needs, conservation objectives of the decision maker, etc.)
9. Record decisions in the conservation plan indicating what is expected, how it is to be accomplished, where it applies, and a schedule for application.

   Provide one or more alternatives when decisions are not firm. Use job sheets, work sheets, and planting plans as applicable with a reference to each in the CPO. Also make reference to designs to be developed or approved by SCS.
10. Record decisions for operations, management, and maintenance.

APPENDIX 1-5

U.S. FOREST SERVICE
EROSION CONTROL GUIDELINES

Vegetation Establishment and Erosion Control on Management and Construction Projects

Specifications for Watercourse Buffer Strips

Timber Management

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PROTECTION OF THE ENVIRONMENT

Vegetation Establishment and Erosion Control on Management and Construction Projects

Obejctive: Prevent unacceptable soil movement.

Goals: Manage resources in such a manner that--

--Erosion is controlled as completely as possible, not exceeding limits prescribed below.

--Sediment in streams should not exceed limits for use as described in Water Quality Standards for Managing the National Forests in the Appalachians.

TOLERABLE EROSION LOSSES

Table I is an example of the type of tables that soil and water scientists must develop for each planning unit. It is based upon information contained in the Soil Resource Inventory of the unit, plus the Guide to Sediment Investigations (1) and Hydrologic Group K and T Factors of Series having Type Locations in the South Region (2). Procedure for developing Table 1 is attached as Appendix A in this section.

The standards on Page 2 will protect soil productivity and water quality, providing buffer strips are maintained to standards described in Standards I-3--Specifications for watercourse buffer strips.

Table 1 - Maintaining Erosion Rates Within Acceptable Limits on Construction Projects and Resource Management Areas. 1/

Rooting Depth (Inches) 2/	Maximum Gross Erosion 3/ From All Sources (Tons/Acre/Year)	Percent Slope	Minimum Percent Ground Cover Needed
10 - 20	2	5	40
		10	75
		15	80
		20	90
		25	100
20 - 40	3	5	35
		10	70
		15	75
		20	85
		25	95
40 - 60	4	5	30
		10	60
		15	70
		20	80
		25	90
60 +	5	5	25
		10	50
		15	65
		20	75
		25	85

1/ This Table illustrates a slope length of 72.6 feet and a moderately erodable soil (k factor = .28). Standards must be calculated (see Appendix A) through use of a Modified Musgrave Equation for areas with different slope lengths or erodibility index.

2/ The rooting depth is that vertical distance in the soil profile where roots can grow in search of water and nutrients.

3/ Water Quality must be protected at all times.

EROSION AND SEDIMENT CONTROL IN THE GENERAL FOREST AREA

Guides to preventing and/or controlling erosion and sediment in timber sale areas are included in Regional FSM Supplement 2482.

Control of Erosion and Sediment on regeneration areas is included in Regional Emergency Directive Number 2, 2470.

EROSION AND SEDIMENT CONTROL IN CONSTRUCTION AREAS

FSM 7706 discusses the coordination required in the planning of the transportation system. Specific coordination instructions for watershed protection are set forth in FSM 7706.14. Consideration of erosion control and resource protection during location and design are discussed in FSM 7723.4. Construction specifications for transportation facilities set forth definite standards for erosion control and resource protection during construction. Regional FSM Supplements 7705.1 and 7723 discuss controlling erosion and sediment on temporary roads.

REFERENCE LIST

1. Guide to Sedimentation Investigations, South Regional Technical Service Area, SCS, March 1965.

2. Hydrologic Group K and T Factors of Series Having Type Locations in the South Region, SCS, August 1971.

3. How to Establish Erosion Tolerances, Smith and Stamey, Journal of Soil and Water Conservation, Vol. 19, No. 3, May-June 1964.

4. A Forest Atlas of the South, USFS, 1969.

5. North Fork Citico Creek Watershed Study for Water Years 68 and 69.

Specifications for Watercourse Buffer Strips

I. **Areas of significant soil disturbance such as areas below roads, skid trails and construction sites.**

The following standards apply to the UNIT. Forest Staff will prepare additional standards to protect water quality for special designated areas.

RECOMMENDED HORIZONAL WIDTH IN FEET TO BUFFER STRIP BETWEEN TOE OF ROAD, SKID TRAIL, OR OTHER SIGNIFICANT DISTURBANCE AND PERENNIAL OR INTERMITTENT STREAM OR LAKE (1), 1/

Erosion Hazard of Buffer Strip Soil 2/	(2)----------Percent Slope 3/ ------------						
	0	10	20	30	40	50	60
Slight	30	55	80	105	130	155	180
Moderate	40	75	100	140	170	200	235
Severe	50	90	130	170	210	250	290

ACTIVITIES WITHIN BUFFER STRIPS

PERMITTED

--Felling of Timber
--Cable skidding
--TSI
--All regeneration and intermediate cuts. Cutting practices within one chain of all fishable streams (those 4 ft. or wider) must be modified by leaving a minimum of 50% of the overstory shade. Streams less than fishable size will follow shade standards in Item II.

PROHIBITED

--All wheel or crawler vehicles
--Roads except at designated crossing
--Removal of more than 50% of overstory within one chain of fishable stream.
--Log loading areas.
--Mechanical site preparation.
--Prescribed burning.
--Recreation construction. (boat docks and launching ramps excepted)

The guidelines do not apply to ephemeral water courses (those that flow only in direct response to precipitation and whose channels are at all times above the water table), but such water courses will not be used for roadways or skid trails.

1/ As a general rule where 7-1/2' USGS contour maps are available all areas with a blue line designating a watercourse should require a buffer strip. The need for additional buffer strips can then be determined by an on site inspection.

2/ This a weighting of soil factors (texture, structure, organic matter, and permeability) important in soil erodibility.

3/ All activities on slopes to right of heavy line must be coordinated with Forest soil and water staff.

II. Areas without significant soil disturbance.

Maintain a one-chain shade strip on either side of fishable streams. Limit shade removal in these strips to a maximum of 50 percent of the overstory. Along smaller perennial streams the shade strip may be gradually narrowed to 10 feet on either side at the extreme headwaters, and may consist of understory shade only.

Exceptions to the above criteria must be noted in the Unit Plan along with mitigating measures.

REFERENCE LIST

1. Trimble and Sartz - How far from a stream should a logging road be located? Journal of Forestry, Volume 55, No. 5, May 1957.
2. SCS, Hydrologic Group K and T Factors of Series having type locations in the South Region, July 1970.

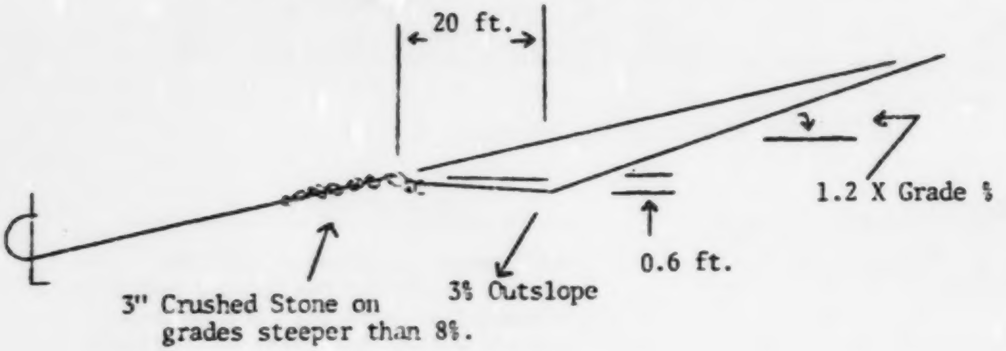
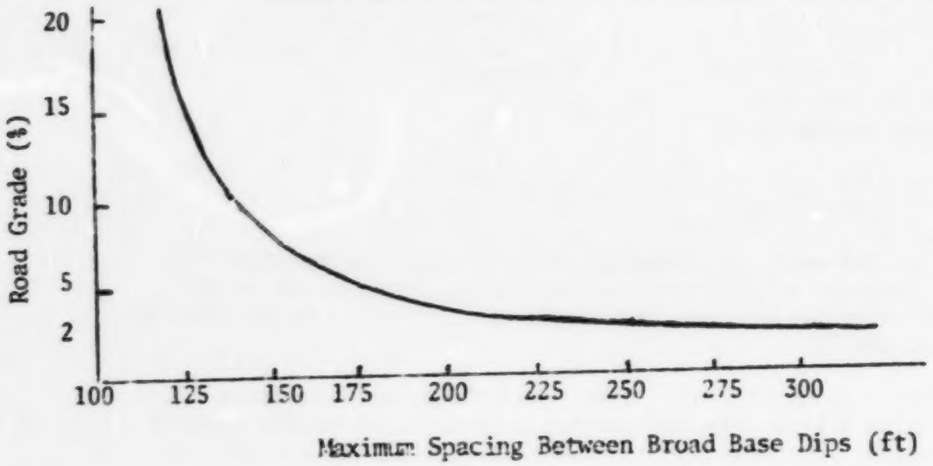


FIGURE 2

Minimum specifications for Construction of Broad Base Dips



Based on the Formula: Spacing + $\frac{400}{\text{Grade \%}}$ + 100

FIGURE 3

Maximum Distance Between Broad Base Dips vs Road Grade

Skid Trail Close Out.

a. Water bars will be cut in all skid trails where strips of mineral soil have been exposed, such to be spaced according to Table 2.

b. Skid trails where 50% or more of any 20 chain segment is exposed mineral soil will be revegetated by the methods outlined for haul roads. Lime, fertilizer, seed and mulch will be used as specified in Appendix A.

Yarding areas and other bare soil should be--

--ditched or water barred to provide proper drainage into a filter strip
--limed, fertilized, seeded and mulched as outlined for roads.

Timber sales areas will be closed to traffic after being put to bed unless the roads are put on the District Transportation System and set up for periodic maintenance. Roads will be effectively blockaded.

TABLE 2

Drainage Spacing On Skid Trails

grade (%)	Minimum Spacing (ft)
2	250
5	135
10	80
15	60
20	45
25	40
30	35
45	25

NOTE: A cross drain will be place above intersections and immediately below each intermittent stream crossing.

APPENDIX 1-6

BUREAU OF LAND MANAGEMENT

SAMPLE STANDARDS AND SPECIFICATIONS

Fence Materials

Fence Construction

Dike Construction

Pit Reservoir Construction

Well Construction

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Form 9172–30
(April 1972)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

F–2 – FENCE MATERIALS

1. GENERAL – All posts, wire, and other materials used in construction of fence; wire gates and any special drainage structures required, may be furnished either by Government or Contractor, as provided in the Specification Supplement.

2. GOVERNMENT–FURNISHED MATERIALS – In event it is provided that Government will furnish fence materials, Contractor shall pick up materials at the Bureau of Land Management warehouse or other location stated in the Specification Supplement. Contractor shall load and transport all materials to worksite and furnish labor and equipment to construct fence as specified. Contractor shall be responsible for all materials in his custody until fence is completed and accepted. All unused materials shall be returned, by Contractor, to location from which they were received or nearer destination if so directed by Contracting Officer. Cost of picking up and transporting materials to and from project site shall be included in unit price per rod bid in the *Fence Construction Schedule*.

3. CONTRACTOR–FURNISHED MATERIALS – In event Contractor is required to furnish fence materials, the following specification subparagraphs (a) through (c) shall apply. Contractor shall furnish new, undamaged materials of the best quality of their respective kinds. Upon request, Contractor shall furnish to Contracting Officer the name of supplier, manufacturer, or producer of all materials.

a. *Fence wire and staples*

(1) Barbed wire shall be two twisted strands of twelve and one-half (12½) gauge galvanized wire with two-point barbs of fourteen (14) gauge wire spaced four (4) inches apart. Wire shall be Type I, Style 2, zinc coated in accordance with Table 1, Class 1, of Federal Specification No. RR-F-221.

(2) Woven-wire fabric will not be a component part of fence unless so stated in *F–5 – Fence Construction Specifications Supplement* (Form 9172–28). Woven-wire fabric shall be completely galvanized and of height and design shown on drawings. Wire and design shall be as assigned by the U. S. Department of Commerce Simplified Practice recommendation R9-47 and shall be in accordance with Federal Specification RR-F-221.

(3) Brace wires shall be of twelve and one-half (12½) gauge barbed wire as specified in 3a(1), above, or nine (9) gauge galvanized wire. Tie wires for wood fence stays shall be smooth, galvanized wire either fourteen (14) or twelve (12) gauge. All other tie wires, including gate post loops, shall be smooth, galvanized, nine (9) gauge wire.

(4) Wire fence stays shall be either conventional twisted wire fence stays manufactured from smooth, galvanized, nine (9) gauge wire or two-piece wire stays manufactured from smooth, galvanized, eight (8) gauge, hard steel wire. Wood fence stays shall be sound straight pieces of any species specified in paragraph 3b(2), below, for fence posts. Treating of wood fence stays will not be required. Stays shall be of uniform length and sufficiently long to extend a minimum of three (3) inches above top fence wire and six (6) inches below bottom wire. Stays shall be not less than two (2) inches nor more than three (3) inches in diameter. Two inch by two inch (2"x 2") rough sawn S2S, or S4S pieces will be acceptable.

(5) *Staples* – Staples shall be nine (9) gauge, bright finish, and one and one-half (1½) inches long.

b. *Fence posts*

(1) Steel line posts shall be "T" bar type, channel, or "U" bar type, as Contractor may elect. Each shall have an anchor plate welded or riveted to post and be furnished with not less than five (5) clip type wire fasteners. Steel posts shall be manufactured from wrought, rail, or new billet steel and shall weigh not less than 1.33 pounds per foot exclusive of anchor plate. Anchor plate shall weigh not less than 0.67 pound. Posts with punched tabs for fastening wires are not acceptable. All steel posts shall be painted. Steel posts shall be the length shown on drawings.

(2) All wood posts and wood braces shall be sound and usable single stem posts cut from either green or dead trees. A slight bend in one plane will be acceptable. However, in case of disputes, a line drawn from geometric center of top to geometric center of butt shall not fall outside body of post. Small seasoning checks will be permitted. Twisted, rotted, or otherwise inferior or unsound posts are not acceptable. Following species will be acceptable if treated for full length: ponderosa pine, lodgepole pine, fir, balsam, and tamarack. Split red cedar posts will be acceptable if butt end is treated for a minimum distance of depth setting plus six (6) inches.

The following species will be acceptable without treatment: juniper, red cedar (barked), honey locust, osage orange, and white oak.

Posts and brace rails may be full stem members, sawed members of square cross section, or split members. Full stem members shall have a minimum diameter at small end of three (3) inches for line posts and brace rails, and five (5) inches for all other posts. Sawed members may be rough sawn, S2S, or S4S as Contractor may elect. Sawed members shall have a minimum dimension of four (4) inches by four (4) inches (4" × 4") for line posts and brace rails and six (6) inches by six (6) inches (6" × 6") for all other posts. Split members shall have a minimum cross sectional area at small end of ten (10) square inches for line posts and brace rails and twenty (20) square inches for all other posts. Slabs and wedge-shaped members will not be acceptable. Lengths of all wood posts shall be as shown on drawings. Fabrication of posts and braces shall be done prior to treatment of wood members. When boring or cutting of a treated member is required at construction site, exposed untreated surface of member shall be thoroughly swabbed with creosote.

Posts to be driven shall be machine-pointed on the end driven into ground.

(3) *Wood treating practices* – Posts and braces to be full length treated shall be full pressure treated with one of the following methods:

Pentachlorophenol method: five (5) percent pentachlorophenol (per Fed. Spec. TT-W-570) solution in petroleum (conforming to AWPA Standard P9) shall be applied as prescribed in Fed. Spec. TT-W-571. Minimum net retention of preservative solution shall be six (6) pounds per cubic foot, using empty-cell pressure treating process.

Chromated copper arsenate method: chromated copper arsenate, Type II (Fed. Spec. TT-W-550) waterborne preservative (conforming to AWPA Standard P5) shall be as prescribed in Fed. Spec. TT-W-571. Minimum net retention of solid preservative shall be 0.40 pounds per cubic foot (gauge only) using the full-cell pressure treating process.

Creosote method: (acceptable only if so stated in Paragraph D of *F–S – Fence Construction Specification Supplement)* Grade 1 coal tar creosote meeting AWPA Standard C5-57 shall be applied in accordance with Fed. Spec. TT-W-571, Table I. Minimum net retention of preservation solution shall be six (6) pounds per cubic foot. Empty-cell pressure treating process shall be used.

If split red cedar posts are to be used with treating only on butt end, this treating may be accomplished by either cold soaking process or hot and cold bath process. Either pentachlorophenol solution or coal tar creosote solution, as prescribed above, may be used. Minimum net retention of preservative solution shall be six (6) pounds per cubic foot of wood treated.

c. *Costs* – Cost of furnishing and delivering all materials to worksite shall be included in the pay item for *Fence Construction*.

GPO 894-099

Form 9172-29
(March 1970)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

F-1 – FENCE CONSTRUCTION STANDARD SPECIFICATIONS
STAKING, SITE PREPARATION, AND ACCESS ROADS

A. REQUIREMENT – It is required that fence construction specified be performed, at the location(s) shown on attached *Work Location Map* and in the Specification Supplement, which are made a part hereof, in accordance with Contract, including General Provisions, Additional General Provisions, drawings, and these specifications.

B. DESCRIPTION OF WORK – Fence construction work to be performed is described in the Specification Supplement, which is made a part hereof.

C. STAKING – Government will locate fence lines with stakes at angle points, ends and within sight distances between angle points. Work shall be performed in conformity with stakes. Contracting Officer will designate location of gates, cattle guards, and any drainage crossings which are to have special construction features. Contractor shall protect all location and construction stakes until replaced with fence posts, and protect public land corners or other permanent reference marks or stakes from damage or removal. In case of their destruction or removal by Contractor, stakes will be replaced by Government and actual cost to Government for replacement will be deducted from payments due to Contractor.

D. SITE PREPARATION AND ACCESS ROADS – Fence lines shall be cleared either by Contractor or Government, as provided in the Specification Supplement. In event it is required that Contractor shall clear fence lines, he shall remove all trees, brush and other obstructions large enough to hinder construction operations, and overhanging limbs. Fence lines shall be cleared to a minimum width of four (4) feet on each side of proposed fence. Existing grass sod shall be disturbed as little as possible. Debris from fence line shall be disposed of in the immediate vicinity of fence, as directed by Contracting Officer.

Contractor may construct access roads to construction site and along fence lines, as necessary, during construction with approval of Contracting Officer. Cost of site preparation and construction of access roads, if this work is to be performed by Contractor, shall be included in the pay item for *Fence Construction.*

In event it is provided, in the Specification Supplement, that Government will clear fence lines, such clearing will be done in sufficient amount to remove all trees and brush large enough to hinder construction operations and Government will also construct access roads to extent Contracting Officer determines necessary for construction of fence. Any additional clearing or access roads, deemed necessary by Contractor, shall be done at his expense and only with approval of Contracting Officer.

GPO 858-992

Form 9172–25
(March 1970)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

E–12 – DIKE CONSTRUCTION

1. GENERAL – Earth dikes shall be required in construction of waterspreader systems. All earth dikes shall be constructed in conformance with these specifications and drawings to lines and grades staked at sites, which, in general, will be lines and grades shown on drawings.

2. CONSTRUCTION – Surface areas to be covered by dike foundations and borrow areas shall be cleared of vegetation. Waste material from clearing operation shall be disposed of in immediate vicinity of dikes in layers not to exceed eight (8) inches in depth, as specified by Contracting Officer. All drainages in excess of one (1) foot in depth crossed by dikes shall be cored to a depth of at least one (1) foot below channel bed and banks sloped to not less than 3:1. Drainages shall be backfilled in level layers not to exceed eight (8) inches in depth. Each lift of backfill shall be compacted by one lengthwise trip over backfill with operating equipment. Dike foundation shall be ripped to a depth of one (1) foot. Ripping furrows shall be a maximum of three (3) feet apart and parallel to axis of dike.

Dikes shall be constructed to the height as staked. Carryall equipment shall be used to the extent that effective use of equipment permits and balance of fill material placed in dikes with dozer equipment. Compaction of dozer placed material shall be obtained by a lengthwise trip of tractor at each one (1) foot of rise. Unless otherwise specified or directed, dikes shall be constructed from downstream side and borrow pits shall be left smooth and not in excess of eight (8) inches in depth. Care shall be taken not to disturb vegetation and soil at spillway sections at ends of dikes or adjacent to upstream slopes. Earth material for dike construction shall not be taken closer than twenty (20) feet back from spillway end of dike. After sufficient yardage has been placed in dike, Contractor shall finish, shape, and compact upstream side of each dike until a smooth and uniformly compacted 3:1 slope is obtained. If a 2:1 downstream slope is not maintained in process of fill placement, Contractor shall shape slope to specifications after fill placement. Materials shall not be placed when either they or the surface on which they are placed is frozen or too wet for satisfactory compaction.

3. PAYMENT – Measurement for payment of dike construction will be number of cubic yards of earthfill complete in place in dikes as staked on original ground surface. Payment for dike construction, completed in conformance with these specifications, will be made at unit price per cubic yard in the Schedule and will include cost of all work described in this paragraph.

GPO 856-840

Form 9172–24
(March 1970)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

E-11 – PIT RESERVOIR CONSTRUCTION

1. GENERAL – All steps in pit reservoir construction shall be performed in accordance with the drawings and specifications under this paragraph.

2. SITE PREPARATION – Brush, trees, stumps, and other obstructive objects shall be removed from the area to be excavated and from the area to be covered by excavated earth materials. Such objects shall be disposed of as directed by Contracting Officer.

3. EXCAVATION – Unless otherwise specified on the drawings, end and side slopes of the excavations shall be 4:1. The dimensions of excavation shall be as shown on the drawings or as staked on the ground. During the progress of work, it may be found necessary or desirable by the Contracting Officer to vary the slopes or dimensions of the excavations from those specified herein. No adjustment in unit prices bid will be made by reason of any such change.

In general, material to be excavated can be removed by carryalls although ripping may be required. Contractor will not be required to excavate material from pits at the unit price bid in the Schedule that cannot be removed with customary earthmoving equipment and ripping.

4. EMBANKMENT – All excavated materials shall be placed in embankment, generally downstream from pit excavation as shown on the drawings or as may be designated by Contracting Officer. Excavated materials which are highly pervious, such as sand, gravel, and silt shall not be placed in any part of embankment that will be below high water surface of reservoir.

A natural berm of not less than twenty-five (25) feet shall be left between pit and embankment. Embankment slopes shall approximate 3:1 upstream (excavation side) and 2:1 downstream. Top width shall not be less than ten (10) feet nor more than fifteen (15) feet.

5. PAYMENT – Measurement for payment of pit reservoir construction will be the number of cubic yards in the space excavated to the lines and depths specified.

Payment for pit reservoir construction completed in conformance with these specifications will be made at the unit price per cubic yard bid in the Schedule and will include cost of clearing for and constructing embankments and any other work required in the construction of pit reservoirs in accordance with these specifications.

GPO 856-838

Form 9172–2
(June 1974)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

W–1 – WELL CONSTRUCTION STANDARD SPECIFICATIONS
DRILLING

A. REQUIREMENT – Well construction shall be performed, at the locations shown on the attached Work Location Map and in the Specification Supplement which are made a part of this Contract, including the General Provisions, the Additional General Provisions, and these specifications.

B. DESCRIPTION OF WORK – Work consists of the drilling and casing of water wells described on attached Work Summary Chart to the estimated depths shown for each well, *Provided, however,* That if only one well is to be drilled, estimated depth shall be that shown in the Bid Schedule.

C. DRILLING

1. *General* – Each well shall be drilled at the point staked on the ground or otherwise designated by Contracting Officer. No drilling method which requires circulation of mud or other liquids, under pressure, will be permitted unless the Specification Supplement states that a flowing artesian well is expected or that wellsite is in an area where depth, thickness, and other characteristics of aquifer are accurately known. With the above exception, type of drilling equipment shall be determined by driller. Circulation of liquids under pressure for any reason, with the specified exception, will be deemed sufficient cause for abandonment due to actions of Contractor as described in paragraph W-3A. Drill hole shall be of sufficient diameter to receive casing of diameter specified in the Specification Supplement.

Contractor shall employ extreme care not to seal off or bypass any aquifers in drilling process. Contractor shall make a yield test as specified in paragraph C7 of each water-bearing zone penetrated. Contractor shall suspend drilling and immediately notify Contracting Officer when yield of water is at least equal to amount shown in the Specification Supplement or upon reaching the estimated depth for well as stated in the Schedule or Work Summary Chart. After investigation of circumstances, Contracting Officer may stop further drilling operations or order continuance of the drilling. Maximum depth to which Contracting Officer may require Contractor to drill at the unit price bid is one and one-half times the maximum estimated depth stated for that well.

2. *Alignment* – Contractor shall drill well to conform as nearly as practicable to a true vertical alignment. After casing has been installed, a thirty (30) foot piece of pipe or other rigid device with outside diameter one inch less than the inside diameter of casing shall be used to test alignment of the permanent casing. Testing device, to be furnished by Contractor, shall be passed through all parts of permanent casing. Should alignment fail to meet this test, Contractor shall correct alignment or abandon well and drill a new well within ten (10) feet of the same location at no additional cost to Government.

3. *Log of well* – Contractor shall keep a complete well log showing depth below ground surface at which every important change in formation is encountered. Log shall show thickness, type, color, and drilling characteristics of rocks and soil formation penetrated and particularly the location and quantity of any water obtained. Formations shall be checked and results entered in the log at intervals not to exceed ten (10) feet even through no change in formation is apparent. This log shall be kept up to date with the progress of well drilling and shall be available for examination by Contracting Officer at any time during drilling operation. At the conclusion of drilling, one copy of this log shall be furnished Contracting Officer.

4. *Samples* – A cuttings sample shall be taken at each apparent change in the character of the materials penetrated or at intervals not to exceed ten (10) feet in event of no apparent change, except that when drilling is performed by cable tool method a sample shall be taken at end of each drilling run. When drilling is being performed beyond stated estimated depth for that well, a sample shall be taken at intervals not exceeding five (5) feet. Each sample shall be washed (except for air-rotary samples), kept separate from other materials, and placed in a cloth bag supplied by Government. Each bag shall be labeled in pencil or insoluble ink with the name of well, number of sample, depth interval sampled, and date taken. Samples shall be furnished to Contracting Officer with the well log.

5. *Record of well* – On a form supplied by Contracting Officer, Contractor shall furnish a record of data not fully covered in the well log. This record will include: (a) depth, thickness, and yield of all water-bearing zones; (b) static water level, yield and drawdown of the completed well; (c) type, diameter, lehgth and depth interval of all casing installed; (d) type, size, spacing, and depth interval of all casing perforations; and (e) all other pertinent information required on form.

GPO 854-155

Contractor shall furnish Contracting Officer with all drilling information required by state law for filing on water wells and shall be responsible for preparation of any reports required of driller by state law.

6. *Disposal of drilling waste* – All sand, rock, earth, mud, and water from the bore shall be deposited in such a manner as not to interfere with installation of well platform and pumping equipment.

7. *Testing and developing* – Contractor shall measure the flow by means of a bailing or pumping test of each water-bearing zone penetrated. In the event the water level is lowered to the bottom of the hole, bailing or pumping shall continue until the rate of inflow has been accurately determined. If yield is less than the minimum stated in the Specification Supplement, Contracting Officer may direct Contractor to attempt to increase the yield by bailing, surging, or other means of development. If yield is greater than the minimum stated in the Specification Supplement, Contractor shall not be required to determine the maximum yield of well but shall continue bailing or pumping at a constant rate equal to or greater than that specified for at least one hour after the drawdown level has become constant.

After specified yield is assured, Contractor shall make taste, soap, color, and odor tests in the presence of Contracting Officer. If, from results of these tests or any others he deems necessary to make, Contracting Officer determines that flow is inadequate or that quality is not suitable, Contractor will be directed either to abandon well or proceed with drilling.

8. *Payment*

a. Measurement for payment will be the depth drilled in feet *except* where the Bid Schedule shows an estimated depth of more than one hundred (100) feet and the well is completed or abandoned due to insufficient quantity or unacceptable quality of water at a depth of less than one hundred (100) feet, payment will be made for a depth of one hundred (100) feet for that well. Payment for drilling completed in accordance with these specifications will be made at the unit price per lineal foot bid in the Schedule for the size of hole specified. Payment for alignment of well, testing alignment, logging the hole, taking samples, furnishing well record, disposing of drilling wastes, testing and developing for the first four (4) hours, and furnishing equipment is included in the unit price bid for drilling.

b. *Testing and developing* – If more than four hours are required for testing and developing of one well, payment will be made at the unit price for "Testing and Developing" bid in the Schedule. Measurement for testing and developing for each well will be the actual number of hours spent performing that work, as described in paragraph C7, minus four.

APPENDIX 11-1

BEST MANAGEMENT PRACTICES BY SOURCE CATEGORY

Agricultural Non-Point Sources

Silvicultural Non-Point Sources

Mining Non-Point Sources

Construction Non-Point Sources

Urban Runoff Sources

Hydrologic Modifications

Residual Wastes

*Note: Information taken from Supplement No. 1, Guidelines for State and Areawide Water Quality Management Program Development, November 1976, issued by the Environmental Protection Agency.

DEC 18 197[illegible]

BEST MANAGEMENT PRACTICES AGRICULTURAL NONPOINT SOURCES WATER POLLUTION

Agricultural nonpoint sources are a broad category covering all crop and animal production activities. Crop production includes both irrigated and non-irrigated production, such as row crops, close grown crops, orchards and vineyards, and fallow land temporarily out of production. Animal production includes such systems as pasture and rangeland grazing, semiconfined feeding and grazing, and concentrated animal feeding operations.

Introduction

This guidance is intended to provide information regarding the control of pollution from a agricultural nonpoint sources, and to supplement information regarding the control of agricultural discharges regulated under the requirements of NPDES. Agricultural production activities provides, on a national scale, significant sources of pollutants which reach both surface and ground waters. These may be either point sources or nonpoint sources, or combinations of the two.

Description of Agricultural Activities

Agricultural nonpoint sources are the crop and animal production systems that result in diffuse runoff, seepage, or percolation of pollutants to the surface and ground waters. There are a number of different activities within each of the systems that may cause water pollution. The runoff, seepage or percolation of pollutants generated by the activities are strongly dependent on climatic events such as rainfall and snowmelt. In general, they are intermittent and do not represent a continuous discharge. The nature of the pollutants depends on the particular activities underway at the time of the climatic events. Both the nature and amount of pollutants are also dependent on other factors such as soil types, topography, crop and animal types, and crop and animal production methods.

Crop Production

There are five general categories of activities associated with crop production which can produce the potential for nonpoint source pollution:

1. The disturbance of the soil by tillage or compaction by machinery.

2. The alteration of natural vegetative patterns by substituting crop plants for natural vegetation or leaving the soil without vegetative cover.

3. The increase in available nutrients, over the quantity available through natural cycles, by the application of fertilizers.

4. The introduction of chemical compounds not found in significant quantities under natural conditions such as by the application of pesticides.

5. The application of surface or ground waters for the purpose of irrigating crops.

Animal Production

There are three general categories of activities associated with animal production which can produce the potential for nonpoint source pollution:

1. Concentration of animals (and their wastes) in a particular location for an extended period of time such as at feeding areas.

2. Overgrazing of range and pasture lands that removes vegetative cover from the land.

3. Concentration of animals instreams or along stream banks in such numbers as to cause disturbance of the stream bottoms or banks, or result in direct deposit of manure into streams.

Identification of Pollutants

Six general types of nonpoint source pollutants that may result from activities associated with agricultural production systems are:

1. Sediment: Sediments, by volume, are the most serious pollutants resulting from agricultural production. They include principally mineral fragments resulting from the erosion of soils but may also include crop debris and animal wastes. Sediments can smother organisms in water bodies by forming bottom blankets, interfere with the photosynthetic processes by reducing light penetration, and act as carriers of nutrients and pesticides. Deposits also may fill reservoirs and hinder navigation.

2. Nutrients: Nutrients, above the natural background levels of an area may result from fertilizer applications and animal wastes. Soluble nutrients may reach surface and ground water through runoff, seepage, and percolation. Ions may be adsorbed on soil particles and reach surface water through sedimentation processes. Nutrients may also reach surface water by direct washoff of animal wastes and recently applied fertilizer.

Excessive nutrients can lead to imbalance in the natural nutrient cycles and cause eutrophication. In some cases, excessive nutrients can be a health hazard.

3. Pesticides: Pesticides which are applied in the agricultural production unit may be insoluble or soluble. The entrance of pesticides into the surface or ground waters follows approximately the same patterns as nutrients. Pesticides may cause acute toxicity problems in the water bodies or insidious toxicity problems through the entire food chain.

4. Organic Materials: Animal wastes and crop debris are the principal organic pollutants that result from agricultural production. They may reach surface waters through direct washoff, or, in their soluble form, reach both surface and ground waters through runoff, seepage or percolation. The organic materials place an oxygen demand on the receiving waters during their decomposition. In addition, they may lead to other problems such as tastes, odors, color, and nutrient enrichment.

5. Salinity (TDS): The necessity of leaching to remove, or prevent the damaging accumulation of salts in the root zone of plants has the potential of inducing subsequent quality problems in both surface and ground waters if agricultural waters are not properly managed. Percolating water may reach ground water through further deep percolation, or move laterally into surface water bodies. The problem becomes more pronounced when the applied irrigation water initially contains dissolved solids which will become more concentrated as the plants remove water for their use. Severity of pollution depends not only on the nature of the receiving waters but also on the nature of the uses of the receiving waters.

6. Microorganisms: Any potential disease-causing microorganisms (pathogens) in water are a matter of concern to the health and safety of the water users. Animal wastes are the principal source of pathogenic microorganisms resulting from agricultural production. Pathogens reach the water bodies through the same routings as the animal wastes.

Basis For Best Management Practices Development

Best Management Practices for agricultural production are the most practical and effective measure or combination of measures, which when applied to the agricultural management unit, will prevent or reduce the generation of pollutants to a level compatible with water quality goals. They often enhance the productivity of the soil as well as control pollution.

Because of the variability in production methods, crops and animals, soil types, topography, climate, etc., the BMP for any specific agricultural management unit or area will vary. The selection of Best Management Practices for a particular agricultural management unit or area is a complex process. Any measure or combination of measures applied to an agricultural management unit or area which will achieve water quality goals is a potential BMP. However, the measures are generally the type that are incorporated into a soil and water conservation plan as developed by a landowner or land user, with the assistance of a conservation district and/or the Soil Conservation Service, Extension Service, Forest Service, and others.

The principal emphasis should be placed on measures that will prevent or control the runoff, seepage or percolation of pollutants from crop or animal production management units. Preventive measures must be fully integrated into the total production management system of the agricultural management units. In essence, the soils, nutrients and pesticides should be kept on the land where they perform their intended agricultural function.

Because of the widespread nature of sediment runoff, erosion control measures should be a principal means of controlling pollution from each agricultural management unit. Control of erosion not only will prevent soils from leaving the land, but also will materially reduce the nutrients and pesticides that reach the nation's waters adsorbed to soil particles. Where necessary, to further prevent or reduce the entrance of sediments into water bodies, supplemental measures such as debris and sediment retention basins should be utilized.

In cases where excess amounts of nutrients, pesticides and animal wastes cause particular problems in surface or ground waters, additional control measures may be necessary. These measures might relate, for example, to the application (timing and amount) of fertilizers and pesticides, the prevention of the concentration of animals, and the collection and adequate disposal of the animal wastes. Salinity buildup resulting from irrigation must be analyzed in terms of the particular problem with subsequent development of appropriate measures.

Description of Prevention and Reduction Measures

Measures which can be applied to an agricultural management unit to prevent or reduce pollutants from reaching surface or ground waters can be generally classified into four categories. They are: (1) structural measures, (2) conservation cropping systems and animal management systems, (3) quantitative and qualitative management of cropping system inputs, (4) vegetative measures.

Structural measures generally involve some physical method designed to reduce erosion or prevent sediment runoff. They include such things as barriers applied at the source such as terraces, conveyance systems to enhance non-erodable flows such as waterways and drop structures, and catchment systems for the final clarification such as debris basins. Off-stream watering points, controlled access watering points at water bodies, diversions around feeding areas, and manure trapping basins are considered to be structural measures.

Cropping systems and animal management systems involve the spacial and sequential arrangement of crop plant and animal populations. The arrangement of crops on a field such as strip cropping, crop rotation such as sod-forming grass rotation systems, and tillage methods such as minimum tillage can significantly reduce pollutant transport. Control of animal populations so as to prevent overgrazing or the concentration of animals in particular locations can reduce erosion, sediment runoff, and the runoff of concentrated animal wastes.

Inputs into cropping systems which are not efficiently utilized can become potential pollutants. Nutrient and pesticide applications should be matched to the immediate needs of the agricultural production systems. The timing of the applications should take into consideration external hydrologic forces. The efficient use of irrigation water can materially reduce the salinity buildup problems associated with runoff, seepage, and percolation of the water not utilized by the plants.

Vegetative covering on bare, or exposed soils is any crop planted solely to prevent, or control erosion and sediment runoff. It can be used during the winter months, between regular crops during the growing season, or where denuded areas have resulted from overgrazing or some other activity. The vegetative cover protects the bare ground from the erosive energy of falling rain and flowing runoff water and filters out sediment actually being transported in the runoff water leaving the site.

Information Sources

The prevention and reduction measures outlined in the foregoing are generally described in "Methods and Practices for Controlling Water Pollution from Agricultural Nonpoint Sources," EPA-430/9-73-015. Oct 1973. Data on control of dust is presented in "Investigation of Fugitive Dust, Volume 1: Sources, Emissions, and Control" EPA-450/3-74-036a June, 1974, Specific information on the application of the measures for agricultural nonpoint sources and water quality management is contained in "Control of Water Pollution from Cropland, Volume I " USDA, ARS and EPA, ORD. November 1975. "Interim Report on Loading Functions For Assessment of Water Pollution from Nonpoint Sources" EPA; ORD.

November, 1975 provides data for assessing the problem. Information on specific aspects of agricultural nonpoint source pollutants and their control can be found in research reports of EPA, USDA, and other Federal agencies, State and local agencies, colleges and universities, and agricultural trade associations and in grazing and range management documents by these groups.

Design information on various conservation methods can be obtained from Soil Conservation Service handbooks. Specific information on particular locations can be obtained from SCS Field Offices, the Extension Service, soil and water conservation district offices, and other informed agencies and groups.

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DEC 18 1979

Best Management Practices
Silvicultural Nonpoint Sources of Water Pollution

Silviculture is the cultivation and harvesting of timber for commercial purposes. As such, the term includes all activities related to its purpose from the planting of seeds, through those involved in the maturing of the crop, its harvest and transportation from the growing area. In addition to being performed on approximately 500 million acres of commercial forest land utilized for the continuous production of marketable timber, portions of the overall silvicultural activity take place on a number of lands being transferred from a wooded state to another use.

Introduction

This guidance is intended to provide information regarding the control of pollution from silvicultural nonpoint sources, and to supplement information regarding control of silvicultural associated discharges regulated under the provisions of the NPDES and 404(e) permit programs.

Silvicultural activities can result in the development of significant sources of pollutants which may reach surface or ground water, most often due to a climatic event, although certain construction or hydrographic modification activities have been recognized under the 404(e) program as being essentially due to a specific activity of man.

While all silvicultural activities are inter-related, those activities producing pollutants can be divided into four classes: (1) Access systems (log roads and other access and transport systems); (2) harvesting; (3) crop regeneration; and (4) intermediate practices and activities. The amount of pollutants generated by these activities are strongly dependent upon the magnitude and characteristics of climatic events, the physical characteristics of the area (soil type, topography, etc.), and the characteristics of the individual operations as they are practiced in a specific area.

Description of Silvicultural Activities

The four general classes of activities associated with silviculture which may produce pollutants are:

1. Access Systems- The forest access road system is constructed to provide access for man, materials and equipment to production units and to serve as routes for transport of harvested logs from the production unit. Such roads are also used for management and protection of successive timber crops, and for other access purposes, including recreation. In terms of construction, these roads range

from very narrow trails, through unsurfaced roads to higher speed paved roads. The frequency of use is highly variable ranging from intensive use to only occasional usage over a number of years.

Nationally, and in certain specifications the forest road system is the major contributor of sediment to the streams in forested areas. These sediment loads may originate as a result of road construction (including stream crossings), direct erosion from the roads, indirect erosion caused by changes in drainage patterns and systems, and mass soil movement due to slides and slips.

In addition to the sediment problems, additional pollution problems may be created due to debris (organic pollution) resulting from construction and log transport, and from herbicides used to control re-growth in the right-of-way.

2. Harvesting Systems-- The harvest system includes the process of felling the tree, preparing it by de-limbing and cutting into desired lengths, and moving it to a central accessable location for transport out of the forested area. The four basic harvest systems used in the United States include seed tree, shelterwood, selection and clear-cutting.

The harvesting of timber results in removal of cover, to some degree, from the forest floor. Improper choice (or performance) of the harvesting system may seriously increase the erosion phenomena and consequently, the potential for sediment pollution. Similarly soil movement may occur due to increased percolation resulting from removal of the vegetative cover.

After felling, the timber is moved (yarded) to a temporary storage site or "landing" by one of three basic general methods--tractor (on skid trails), high lead, or skyline cable. Recently, timber producers have also experimented with ballon and helicopter. Obviously, the magnitude, the disturbance of earth, and vegetative cover would be reflected on the erosive tendency with its consequent danger of sediment pollution. Each system, when properly chosen and operated can minimize environmental problems.

In addition to the sediment pollution, the harvesting system can create organic pollution problems due to debris and slash washed from the forest floor or otherwise reaching streams, pollution due to various chemicals used in the growing and harvesting operation, and thermal pollution due to removal of the canopy over streams.

3. Crop Regeneration- Regeneration of a harvested area includes both the natural regenerative process and man's activities in preparing and improving the site followed by planting or reseeding. The major activities include (a) debris removal to reduce fire hazard and allow use of equipment for subsequent operations, (b) reduction or removal of brush cover and undesireable species of trees and, (c) cultivation of the soils.

The use of fire, chemicals and soil disturbing machinery increase the potential for sediment and other pollution to occur. The time span for such pollution to occur is variable depending upon the climatic factors and operational schedule.

4. Intermediate Practices - Other silvicultural processes relating to thinning of an immature forest, fertilizer application and pesticide treatments are undertaken during the crop cycle. In general these activities are infrequent during the crop cycle.

The thinning process involves the removal of selected trees from an immature forest, in essence a type of harvesting, which would tend to generate sediment pollution, but at a lesser rate than harvesting.

Chemical application, (fertilizers and pesticides) can result in water pollution, if improperly carried out or adversely affected by extreme and unexpected natural event.

Pollutants Originating from Silvicultural Activities

The principle pollutants generated by silvicultural activities are sediments and debris; chemicals, including nutrients, pesticides, and fire retardants; and thermal effects. The origin of the pollutants is generally related to more than one of the activities of the total silvicultural operation.

1. Sediment--Sediments are the most common pollutants resulting from silvicultural activities. The sediments principally result from the erosion of soils, but may also include debris and other organic waste. Sediments upset balanced ecology within streams by smothering bottom organisms in water bodies through the formation of bottom blankets, interfere with the photosynthesis processes by reducing light pentration, serve as carriers of nutrients and pesticides, inhibit fish reproduction of many important species, and by altering stream flow and speed.

2. Nutrients-- Nutrients, above the natural levels of an area, generally result from the application of fertilizers. Soluble nutrients may reach surface or ground water through runoff, seepage, and percolation. Insoluble forms may be adsorbed on soil particles and reach surface water through erosion processes. Nutrients may also reach surface water by direct washoff of slash, debris, and recently applied fertilizer. Excessive nutrients can lead to imbalance in the natural life cycles of water bodies and in some cases can be a health hazard.

3. Pesticides -- Pesticides applied during forest management activites may be insoluble or soluble. The entrance of pesticides into the surface or ground waters follows approximately the same pattern as nutrients. Pesticides may result in acute toxicity problems in the water bodies; or insidious toxicity problems through the entire food chain from lowest to the highest forms of life.

4. Organic Pollutants-- Debris, i.e., slash and other non-merchanable materials, are the principle organic pollutants that result from silvicultural activities. The pollutants may reach surface waters through direct dumping, washoff, and leachate from log storage. The organic materials place an oxygen demand on the receiving waters during their decomposition. In addition they may lead to other problems such as tastes, odors, color, and nutrients.

5. Thermal-- Thermal pollution from silvicultural activities most often results from the removal of canopy cover from stream bodies causing water temperature to rise. Temperature is a significant water quality parameter. It strongly influences dissolved oxygen concentrations and bacteria populations in streams. The saturated dissolved oxygen concentrations in streams is inversely related to temperature.

Best Management Practices for Pollution from Silviculture

Best Management Practices for silvicultural sources is the most practical and effective measure or combination of measures which, when applied to the forest management unit, will prevent or reduce the generation of pollutants to a level compatible with water quality goals.

In BMP selection, it should be recognized that the variability in sources, topography, climate, soils, etc., will in most cases preclude a single BMP covering all activities or situations. The BMP must be tailored to the needs of the particular source and physical conditions.

The principle emphasis should be placed on measures that will prevent or reduce the pollutants in the runoff, seepage, or percolation from the forest management unit. The preventive measures must be fully integrated into the total management system for the particular forest management unit. In essence, the soils, nutrients, pesticides, and other chemicals must be kept on the land area where they perform their intended function of assisting tree growth.

Because of the widespread nature of sediment runoff, erosion control measures must be a principle thrust of the preventive program of each management unit. Particular attention must be paid to erosion prevention measures for logging roads and harvesting activities. In addition to primary control measures, supplemental measures such as debris and sediment basins should be included where necessary to further reduce or prevent the entrance of sediments, slash, and debris into water bodies. Where nutrients, pesticides and other chemicals cause particular problems in surface or ground waters, further control measures may be necessary. The measures would principally relate to the application (timing, method, and amount), utilization, and management of the fertilizers, pesticides, and fire retardant chemicals. Care must be exercised to insure that thermal problems in streams are not created by removal of shade canopy. Attention to proper forest management, engineering and harvesting principles can substantially reduce all pollution attributable to silviculture.

Prevention and Reduction Measures

The measures which can be applied to a timber management unit to prevent or reduce pollutants from reaching surface and/or ground waters can be classified as two (2) general types. These are (1) non-structural or management decision measures, and (2) structural or physical measures.

Management decision measures involve incorporation of water quality protection considerations into the planning and design of activites within the timber management unit. It is at this stage that logging access roads locations and design, harvesting methods, and reforestation decisions must be made. Structural measures generally involve some physical method or technique utilized to reduce erosion and prevent sediment runoff.

Nonstructural measures can be effective methods of reducing pollution generated by silvicultural activities, e.g.:

A. Pollution emenating from access systems may be greatly decreased by careful location, design, construction and maintance of the roads. The importance of not utilizing waterways or normally wet areas as part of the road-access system cannot be over emphasized.

B. Pollution caused by the harvesting operation can be reduced, under certain soil conditions, by mininizing the disturbance or compaction of the soil. Careful location and use of skid trails, particular when the ground is wet, will reduce sediment generation due to the skidding operation. As in the case of roads, skid trails should not be located in normally wet areas, nor should they utilize streams as part of the route. Like road, the trails should follow the countour of the land rather than provide long steep grades. Careful handling of debris will prevent accumulation, which tend to act as dams in streams, and which on breakup, result in high stream velocities causing channel erosion. Early revegetation of disturbed areas will provide stabilization of the soil, thus minimizing erosion.

C. Pollution caused by the regeneration activity and intermediate practices can be minimized by application of proper techniques under favorable conditions by well trained and supervised personnel. Additional techniques, such as provisions of buffer strips along streams may be useful.

Structural measures are utilized when necessary to further reduce erosion and prevent sediment runoff. These measures include culverts, ditches, berms, catch basins, slope stablization, and various road building techniques.

Information Sources

Reduction measures and preventive techniques are generally described in "Processes, Procedures, and Methods to Control Pollution Resulting from Silvicultural Activities" , EPA 420/9-73-010. More Specific information on logging roads is contained in "Logging Roads and Protection of Water Quality", EPA 910/9-75-008, Region X, Environmental Protection Agency. Additional information on features and design of specific measures and management practices may be obtained from other Federal agencies, State agencies, and various forestry associations and publications.

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BEST MANAGEMENT PRACTICES MINING NONPOINT SOURCES WATER POLLUTION

Mining activities in the United States have affected approximately 13 million acres of land according to estimates by the U. S. Department of the Interior. This acreage includes almost 7 million acres which have been undercut by mining activities, and more than 3 million acres disturbed by surface mining activities. The remaining acreage represents land used for containing mining-related mineral waste accumulations. By the year 2000, the Department of the Interior estimates that 30 million acres will be affected by mining operations. While the land area presently affected by mining represents only about 0.5% of the United States, the effects of mining upon water quantity and quality are spread over large regions.

Introduction

Pollution from mining operations arises because the hydrology of surface and subsurface waters is altered when the earth's crust is disturbed to gain access to mineral values held within. The quality of these waters very often deteriorates, and the quantity is often redisturbed as a result of mining operations. Water quality deteriorates when water supplies are contaminated with soluble products present in or generated from mining wastes. Water quantity is affected because natural drainage patterns for surface and subsurface waters are altered. Any disturbance of the earth's crust will alter the environment in the vicinity of the disturbance. The degree to which the environment is altered depends upon the size and depth of the disturbance, the method of the disturbance, and the nature of the disturbed materials. The purpose of disturbing the earth in mining is to extract mineral deposits. Methods used are determined by the placement of the minerals in the earth. Similarly, size and depth of the mine are determined by the distribution of the mineral at the mining site.

The extraction of minerals from the earth's crust can be accomplished by a variety of techniques. For minerals deep in the earth, mine shafts are sunk to gain access to the deposit. This method is usually not used if mineral deposits are available for recovery by surface mining techniques. Underground mining techniques tend to retrieve most of the values in the deposit compared to surface mining techniques.

Surface mining creates more visible defacement of the earth's surface, and results in disturbance of large land curves.

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The most serious pollutant arising from mining activities is the mine drainage generated by oxidation of pyritic materials with air in the presence of water; this drainage is an acidic mixure of iron salts, other salts and sulfuric acid. Mine drainage arises from both underground and surface mining sources, and from coal and many metal mining operations. Coal deposits and so-called hard rock mineral deposits are commonly associated with pyrite and marcasite, which are disulfides of iron. Acid mine drainage can find its way into surface waters, where the acid and sulfate may result in severe deterioration in stream quality. The acid can react with clays to yield aluminum concentrations sufficient for fish kills, and with limestone to yield very hard waters expensive to soften. The acid can also selectively extract heavy metals present in trace quantities in mineral and soil formations, resulting in toxic conditions in lakes and streams.

Mining refuse waste materials left near the mining site after raw minerals have been cleaned or concentrated is another source of pollution. Much of this refuse contains pyritic material which can be oxidized to acidic substances. The resultant acid water may remain in the pile until a rainstorm, at which time it is flushed into nearby watercourses. Mine drainage "slugs" during storms are very detrimental to aquatic life in surface waters.

Mining operations also generate wastes, commonly called spoil, in the form of disturbed rock and soil. If this spoil is left in piles, erosion and runoff will carry sediment into streams. This sediment is capable of destroying life in streams, results in decreased capacity of streams and reservoirs, and destroys fish and wildlife habitats.

Improperly impounded sediment may be released suddenly as a mud slide and thus poses a direct threat to life and property.

Mining activities have a pronounced effect on groundwater supplies. The various operations used to mine the mineral deposits can result in alteration of groundwater distribution patterns. Aquifers containing good water can become contaminated because some mining may disturb bedrock formations, which permit mixing of contaminated water with good.

Description of Mining Pollution

Water pollution caused by drainage from mining activities occurs when dissolved, suspended, or other solid mineral wastes and debris from mining and related operations enter receiving streams or ground water. Mine drainage includes both water flowing by gravity or pumped from underground mines, and runoff or seepage from surface mines and from excavated waste materials. Polluting drainage is often corrosive, highly mineralized, toxic to aquatic life, and may be laden with chemical and/or soil sediments.

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Pollutants may be generated during all phases of the mining cycle whether the commodity is coal, sand and grav [illegible] anium, metallic ore or nonmetallic ore; exploration, development, [illegible] operation, closure, and reclamation. In many cases, water pollut [illegible] continue long after a mine has ceased operation. Pollution ca [illegible] by inactive or abandoned mines ("orphans") presents special problems of abatement.

Mine drainage pollutants include such dissolved and suspended constituents as acid, alkali, iron, copper, arsenic, cadmium, nickel, phosphate, sulfate, chloride, radioactive minerals, sediment, and colloidal contaminants. The acids, alkalies, metals, and other minerals in mine drainage affect water quality and water use in various ways. To many the most dramatic effects of mine drainage pollution are the destruction of fish and other aquatic life and impairment to aesthetic features. Mine drainage pollution may affect the use of water for municipal, industrial and agricultural water supply by increasing the costs for water treatment.

Identification of Sources of Pollutants

Various active unit operations within a surface or underground mining operation produce pollutants that can ultimately enter both surface and ground waters causing a lowering of water quality. The discharge of pollutants from certain of these unit operations have been classified as point sources by EPA, and certain of them have been classified classified as nonpoint sources. Inactive and abandoned mine sites can be considered nonpoint sources.

Nonpoint pollution from mining activities are strongly dependent on precipitation events although there may be a significant response delay when the ground water is the source of seepage water. The sources may be intermittent or continuous in nature. The nature and amount of pollutants are dependent on such factors as soil type, topography, geology, method of mining, and hydrologic characteristics of the site.

Mining Activities

The basic mining activities that are potential causes of nonpoint pollution sources are:

Exploration is conducted to locate a seam or other economic deposit and to obtain quantity/quality data on that deposit. Site access, excavation, and drilling activities can cause surface denudation and erosion, mineralized ground water discharge, leaching of exposed mineralogic materials, and chemicals seepage or release.

Construction of the mine and support facilities including roads can be a major generator of pollutants.

Runoff and seepage of ground or surface waters may contact mineral matter exposed by the operation and result in mineralized drainage. Slides of unstable spoil piles or disturbed steep slopes can occur causing further landscape and stream damages.

Following the mining operation the improper sealing of underground mines as well as unsucessful revegetation and reclamation of inactive surface mines.

Pollutant Generation and Their Causes

Land disturbed by surface mining is a major source of sediment in mining regions. Studies have shown that erosion and sedimentation rates on strip-mined land are 500 times as great as those on neighboring land that has not been stripped. Overburden dumped on the downslope areas is one of the largest sources of sediment. The post-operative mining period can be the period of most severe erosion. When eroded sediment is transported to a receiving stream it can smother bottom organisms, interfere with photosynthesis by reducing light penetration, and contribute to flooding by filling stream channels.

Acid mine waters result from oxidation of pyrite and other iron-bearing minerals in deposits of anthracite and bituminous coals. The reaction of these exposed sulfur-bearing minerals (usually sulfides) with atmospheric oxygen and water frequently forms a sulfuric acid solution that reacts with soil and rock materials to leach out other pollutants, commonly metals. The acidic water can be toxic to aquatic life and corrosive to manmade structures.

Dissolved minerals contained in mine waters can be present in sufficient concentrations to be toxic to aquatic life. Heavy metals such as copper, nickel and zinc may be present in toxic concentrations, as well as chloride, sulfate, or other troublesome ions. Even though one or more constituents is not present in toxic amounts considered singly, toxic conditions can result from synergestic effects among various constituents.

The total mineralization, total dissolved solids content, of a water can present a salinity problem. It normally occurs when salts contained in geologic formations are penetrated by mining and the resulting saline mine runoff waters enter into receiving streams or ground waters. Aquatic life can be harmed and expensive treatment may be required for certain uses of that water.

The control of water pollution from mining activities is achieved through proper operational management and utilization of preventive techniques, and by mine water treatment. Control of mining nonpoint pollution sources is best achieved through prevention or avoidance. The utilization of preventive and management techniques is the primary thrust for the control of nonpoint mining pollutants.

There are four premises upon which mining pollution control of nonpoint sources is based:

1. That any disturbance of the earth for mineral extraction alters the hydrologic environment to form some amount of water pollutants;

2. That each mine site represents a unique set of chemical/physical and hydrologic conditions;

3. That effective and efficient environmental protection from mining impact requires a total mining plan before extraction occurs that covers management control and preventive measures implementation throughout the mining cycle. Thus, the plan must cover activities initiated and implemented during the pre-extraction and extraction phases, and conclude after extraction has terminated and adequate restoration of the site has been accomplished;

4. That a combination of several management and engineering techniques is usually required to effect a complete pollution control plan that prevents or minimizes pollutants reaching ground or surface waters.

Basis For Best Management Practices Development for Mining Activities

"Best Management Practices" (BMP) means a practice, or combination of practices, that is determined after problem assessment and examination of alternative practices, to be the most effective, practicable (including technological, economic, and institutional considerations) means of preventing or reducing the amount of pollution generated by nonpoint sources to a level compatible with water quality goals.

Best Management Practices for mining activities are the most practical and effective measures, or combination of measures, which when applied to a mine production site, will prevent or reduce the generation of pollutants to a level compatible with water quality goals.

Each identified BMP will differ with the kind of mining, geographic area and conditions, and the extent and age of the mine. A new mine may have a different BMP than an older mine in the same locale. BMP judgements for any specific site will recognize special problems such as poor soils, unstable slopes, toxic conditions, and unfavorable geologic structure. Existing regulatory requirements, future land use, and economic effects will influence BMP developments.

There are a wide variety of measures available that will materially reduce the amount of pollutants generated at a surface or underground mine site. Selection and blending of the appropriate measures through the mining cycle can be categorized in terms of four objectives.

1. Prevention of an increase in the mineralization of the ground or surface waters intercepted by earth disturbance activities:

The quantity and quality of mine water produced can be greatly influenced by various techniques of surface diversion, subsurface dewatering and collection, segregration of toxic mineral matter, and proper management and handling of intercepted water.

2. Minimization of erosion and sediment transport from all surfaces necessarily removed of cover:

Erosion and sediment transport are problems of surface mining and surface facilities of underground mining. Measures to mitigate these phenomena should include grading, compaction, sediment traps and early revegetation of disturbed areas.

3. Careful residuals management of all mining wastes to prevent leaching and erosion:

Measures to control the adverse affects of residual materials stored on the land surface are generally the same as those used in water diversion and erosion control.

4. Prevention of post-operative pollution via proper mine closure and/or reclamation measures:

Mine closure and land reclamation are critical processes in the total mining plan. Closure of underground mines to prevent continued polluting drainage is more difficult than surface activity but a number of sealing and diversion techniques are effective in preventing or reducing continuing problems. A multitude of surface reclamation practices are effective and available. They can be classed as measures to segregate overburden and bury toxic materials, return topsoil, control erosion and sedimentation, moderate topography, stabilize disturbed areas, and permanently revegetate the area.

Information Sources

EPA has published various reports describing methods for management practices and preventive techniques for the control of pollutants from mining activities. The titles of current publications include:

- Processes, Procedures, and Methods to Control Pollution from Mining Activities, EPA-430/9-73-011, October 1973.
- Methods for Identifying and Evaluating the Nature and Extent of Nonpoint Sources of Pollutants, EPA-430/9-73-014, October 1973.
- Analysis of Pollution Control Costs, EPA-670/2-74-009, February 1974.
- Environmental Protection in Surface Mining of Coal, EPA-670/2-74-093, October 1974.
- Inactive and Abandoned Underground Mines, Water Pollution Prevention and Control, EPA-440/9-75-007, June 1975.
- Criteria for Developing Pollution Abatement Programs for Inactive and Abandoned Mine Sites, EPA-440/9-75-009, August 1975.
- Compilation of Federal, State and Local Laws Controlling Nonpoint Pollutants, EPA-440/9-75-011, September 1975.

Additional information on features and design of specific measures is available in the publications and handbooks of other Federal and State agencies and in various mining industry publications.

EPA is committed to the management, prevention and control of pollutants from mining sources. Authority exists under sections 208, 209, 303(e) and 313 of P. L. 92-500 for EPA to initiate a program in conjunction with the States to manage nonpoint sources, although the the primary responsibility for nonpoint source management rests with the States. Establishment and implementation of nonpoint source management programs will be a part of the areawide planning process in designated 208 areas as well as a part of the State water quality management responsibilities in non-designated areas.

Point Sources of Mining Pollutants will be controlled thru the National Pollution Discharge Elimination System Permit Program.

BEST MANAGEMENT PRACTICES
CONSTRUCTION NONPOINT SOURCES
WATER POLLUTION

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DEC 18 1975

Construction is a broad category covering the alteration and development of land for a different use including the installation of structures on the land. The types of projects within the category generally have two common characteristics, namely; (1) They involve soil disturbance, resulting in modification of the physical, chemical, and biological properties of the land; and (2) They are short-lived in the sense that the "construction phase" closes when the development and building activities are completed. Storm waters should be controlled for the life of the facilities to protect downstream areas.

Introduction

This guidance is intended to provide information regarding the control of pollution from nonpoint source construction activities, and to supplement information regarding control of construction associated descharges under the provisions of NPDES and Section 404(e) of the FWPCA.

Construction activities can result in the development of significant sources of pollutants which may reach surface or ground waters. About one million acres of land are being disturbed for construction purposes each year in the United States. Pollution resulting from these construction areas can be catastrophic in downstream areas, particularly in small drainages. This statement is intended to provide guidance in the control of construction nonpoint sources and for the selection of pollution prevention or reduction measures that are useful in reaching water quality goals.

Construction nonpoint sources are the land development and building projects that result in the runoff, seepage or percolation of pollutants to the surface and ground waters. The runoff of pollutants generated by the project is strongly dependent on climatic events such as rainfall or snowmelt. In general, the runoff is intermittent and does not provide a continuous discharge. The nature of the pollutants depends on the particular activities underway at the time of the rainfall or snowmelt. Both the nature and amount of pollutants are also dependent on other factors such as soil types, topography, project characteristics, and the number of people and equipment involved.

Description of Construction Activities

There are many types of projects that fall within the construction category. They generally can be classified into the following sub-categories:

1. Land Development -- Land development involves the construction of housing subdivisions, shopping centers, schools, recreation areas, and related facilities. The areal extent of the land affected is generally large although a project may be completed in segments. Topographic slopes are usually gentle with cut and fill sections relatively minor.

2. Transportation and Communication Networks -- Construction of transportation and communication facilities involves disturbance of the land principally in a linear direction. Areas may be quite large but the width of the disturbed areas is minor compared to their linear extent. These facilities often are located in areas of high relief where slopes may be steep and rugged. Climatic differences are extremely diverse in many of these areas with torrential rains prevalent in higher altitudes.

3. Water Resource Facilities -- Construction of water resource facilities involves disturbing the ground surface for installation of dams, aqueducts and their appurtenant structures. Dams may be located in relatively steep river valleys or canyons, or in areas of fairly low relief. Aqueducts have a great linear extent and are generally located along valley or foothill areas. Climatic differences at these sites may be extremely variable with intense rainfall occurring in mountain areas.

Dams in higher topographic areas may be underlain by hard, non-erodible bedrock. Dams and aqueducts in lower areas generally are located in erodible soils and/or parent materials.

4. Other -- Construction of factories, major office buildings, airports, power plants, etc. is included in this subcategory. Except for airports, the areal extent of these facilities is generally limited and almost all require extensive subsurface excavation. They are generally located in areas of fairly low relief with relatively low cut and fill slopes involved.

Identification of Pollutants

Sediment, resulting from erosion of disturbed soils on construction sites, is one of the principal pollutants. It includes solid mineral and organic materials which are transported by runoff water, wind, ice, or the effect of gravity. Chemical pollutants derived from construction activities originate from inorganic and organic sources and occur in solid form such as asphalt, boards, fibers, or metals; or in liquid form such as paints, oils, glues, pesticides, and fertilizers. Biological pollutants include organisms resulting from soils, animal, or human origins. They may be bacteria, fungi, or viruses. Excess storm water runoff can be a severe cause of pollution. It results from changed conditions due to construction activities.

1. Sediment -- Sediment exerts physical, chemical and biological effects on the receiving stream and water bodies. Physical damage resulting from sediment deposition includes: reduction of reservoir storage capacity, filling harbors and navigation channels, increasing the frequency of flooding and causing bank erosion, increasing turbidity in

water and reducing light penetration, increasing the cost of water treatment, damaging fish life, destroying and covering organisms on the bottom of streams, reducing the flowing speed and carrying capacity of streams, and impairing operation of drainage ditches, culverts, and bridges, altering the shape and direction of stream channels, destroying water recreational areas, and imparting undesirable taste to water.

2. Chemicals -- The major categories of chemical pollutants are: petroleum products, pesticides, fertilizers, synthetic materials, metals, soil additives, construction chemicals, and miscellaneous wastes from construction.

Some petroleum products impart a persistent odor and taste to water, impairing its use for drinking water and contact sports. Many oils have the ability to block the transfer of air from the atmosphere into water, resulting in the suffocation of aquatic plants, organisms, and fish. Some petroleum products contain quantities of organo-metallic compounds (nickel, vanadium, lead, iron, arsenic) and other impurities which can be toxic to fish and other organisms.

The three most commonly used pesticides at construction sites are herbicides, insecticides, and rodenticides. The unnecessary or improper application of these pesticides may result in direct contamination of water, or indirect pollution by dirt which settles in surface waters, or transport off soil surfaces into water.

Nitrogen and phosphorous are the major plant nutrients used for the successful establishment of vegetation on disturbed soils of construction sites. Heavy use of commercial fertilizers can result in these materials reaching water bodies to accelerate the eutrophication process.

The construction industry utilizes many different types of synthetic products. These include structural frames, window panes, wall board, paints, and many others. Heavy duty construction materials are synthesized from nondegradable organic materials. They are little affected by biological or chemical degradation agents, and are usually designed to withstand the most severe physical conditions.

The concern over metal pollution of water bodies is associated mostly with the heavy metals (mercury, lead, zinc, silver, cadmium, arsenic, copper, aluminum, iron, etc.). Metals are used extensively in construction activities for structural frames, wiring, ducts, pipes, beams, and many other uses. Construction vehicles, gasoline, paints, pesticides, fungicides, and construction chemicals are also potential sources of heavy metals pollutants. When these latter materials are weathered, decomposed and disintegrated by various agents, they ultimately form oxides and salts that can affect aquatic organisms.

Soil additives are chemicals and materials that are applied to the soil during construction activities in order to obtain desired soil characteristics. Often construction activities cover large areas consisting of several different types of soils. The nature of soils is dependent on the climatic, topographic and geological conditions. The type of soil additive applied depends on the objectives of the construction activities. Soils may vary from one location to another in the amount of water they contain, particle size distribution (clays, silt, sand and gravel), water infiltration rate, ability to support heavy structures, and resistance to compaction by construction equipment. Soil additives are used to control the amount of moisture absorbed by roadway surfaces, to reduce the degree of shrinking and expanding of clay soils in order to prevent structural damage of buildings and air field runways, and to increase the firmness of soils. Several materials are used to obtain desired soil properties. Commonly used materials include lime, fly ash, asphalt, phosphoric acid, salt, and calcium chloride. The soil additives carried in runoff from construction sites alter the quality of receiving waters. However, little work has been conducted to show the net environmental effects of these soil additives.

Many other chemicals are used in construction for purposes such as: pasting boards together, sealing cracks, surface treatment, solvents for oils and paints, and dyeing and cleaning. The amounts of chemicals leaving construction sites as pollutants have not been established. Poor construction activities that are liable to contaminate water resources include the following practices: dumping of excess chemicals and wash water into storm water sewers; indiscriminate discharging of undiluted or unneutralized chemicals; disregard for proper handling procedures resulting in major or minor spills at the construction site; and leaking storage containers and construction equipment.

Miscellaneous pollutants include concrete wash from concrete mixers, acid and alkaline solutions from exposed soil or rock units high in acid, and alkaline-forming natural elements. Cuts through coal beds have resulted in the seepage of mine acids into streams. High lime areas often increase the alkalinity of receiving waters.

3. Biological Materials -- Biological pollutants from construction include soil organisms and organisms of human and animal origin. They include bacteria, fungi, and viruses. The majority of biological pollutants are found in the topsoil layer where they can feed on dead plants, animals, birds and other organisms.

The biological pollutants resulting from construction activity indicate that the greatest pollution potential are of animal and human origin. They are more prevalent on construction sites where improper sanitary conditions exist.

Basis For Best Management-Practices Development

Best Management Practices for construction are the most practical and effective measure or combination of measures which, when applied to the land development or building project, will prevent or reduce the runoff of pollutants to a level compatible with water quality goals.

Since the amount of pollutant runoff from construction sites depends on numerous variables such as the type of construction involved, the quantity and intensity of rainfall, the soil characteristics, etc., it is recognized that those particular types of control measures that will prevent this runoff must be installed on the site. The proper mix of control measures must be established on site-specific basis. Whether they are properly installed and maintained must be checked by on-site inspection as there is no way that effluent monitoring can accomplish this.

Best Management Practices for construction activities consist of measures which will prevent the movement of pollutants from construction sites. While sediment is the principal pollutant resulting from earth-disturbing construction activities, chemicals, hydrocarbons, solid wastes, and other materials must also be considered.

Description of Preventive and Reduction Measures

There are essentially three basic measures for controlling the runoff of sediment from construction sites. They include: (1) preventing erosion of exposed soil surfaces, (2) restricting the transport of eroded particles, and (3) trapping sediments being transported. Measures developed for controlling movement of sediment and other materials by water generally are also useful for controlling that generated by wind action.

Preventing erosion of exposed soil surfaces is achieved by protecting these surfaces with such coverings as mulch; sheets of plastic, fiberglass roving, burlap, rock blankets, or jute netting; temporary growths of fast-growing grasses; or sod blankets. Mulch consists of hay, straw, wood chips, bark, or any other suitable protective material. Sheets of plastic and netting materials are generally used on steep slopes where vegetation is difficult to establish or erosion rapid. Seeding of temporary fast-growing grasses is most desirable when final grading cannot be done until a later date and climatic conditions permit. Sod often is used as a covering in critical areas susceptible to erosion.

Limiting the areal extent of soils disturbed at any one time is a usable mechanism for minimizing erosion. It can be achieved by planning and carrying out the job so that as work progresses existing vegetation is removed only on that area of soil surface essential to immediate work activities. Construction activities are completed on each exposed area and revegetation accomplished as rapidly as feasible.

Solid wastes should be collected at the site and removed for disposal in authorized disposal areas. Frequent garbage removal is essential. Any useful materials can be salvaged or recycled. Often, borrow pits, or excavations can be filled with inert solid wastes.

Runoff of construction chemicals resulting from paints, cleaning solvents, concrete curing compounds, and petroleum products, can be largely restricted by sediment control measures as many of these materials are carried by sediment particles. Good "housekeeping" procedures such as proper disposal of empty containers, prompt cleanup of accidental spills, and neutralization or deactivation of excess chemicals and wash waters should minimize runoff of the remaining materials.

Information Sources

Nonpoint source pollution control practices discussed above in summary form are described in more detail in the following publications?

"Processes, Procedures, and Methods to Control Pollution Resulting From All Construction Activity" EPA 430/9-73-007, October 1973

"Comparative Costs of Erosion and Sediment Control, Construction Activities" EPA 430/9-73-016, July 1973

"Guidelines for Erosion and Sediment Control Planning and Implementation" EPA R2-72-015, August 1972

Additional data regarding design of structures, specifications for vegetative practices, instructions for installation of surface protective coverings, and other useful measures are available in numerous published standards and specifications, manuals, handbooks, or guides. They are generally prepared and issued in local areas by States, Counties, or Conservation Districts, with the assistance of the U.S. Soil Conservation Service.

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BEST MANAGEMENT PRACTICES
URBAN RUNOFF SOURCES OF WATER POLLUTION

Urban runoff pollution is the result of precipitation washing the surface of a city--the pollution associated with this runoff being inevitably a consequence of human activity. Urban runoff contributes significant amounts of pollution to receiving water. These sources may be either point or nonpoint, or combinations of the two. In meeting this problem, this guidance is intended to provide information regarding the management of pollution from urban runoff and to supplement information regarding control of urban runoff under NPDES requirements.

Introduction

Pollution from urban runoff occurs when precipitation flushes the urban environment and carries pollutants to receiving waters. As surfaces are flushed, the polluted water flows overland toward the collection systems. The initial collection systems are the land surface, roof tops, parking lots, and the like, which slope toward secondary collection systems (roadways, streets, gutters, and drains). It is there that surface water concentrates as it flows into the sewerage. These systems are of two general types: seperate or combined. Separate storm sewers carry, in addition, untreated municipal and industrial wastewater. On the other hand, separate storm sewers discharge directly other hand, usually have flow-splitting devices which, during high flows, bypass a high percentage of untreated combined sewage directly to the receiving waters. The remaining smaller fraction receives some treatment before being discharged.

Polluted runoff contains substantial amounts of organic material, inorganic solids, and coliform bacteria. Other pollutants include nutrients, pesticides, and heavy metals. Clearly, these pollutants degrade the receiving water quality. This degradation often results in decreased dissolved oxygen levels and high turbidities. Coliform bacteria, indicate the presence of pathogenic bacteria which are pollutants. Moreover, nutrients, in the form of nitrogen and phosphorus, contribute to increased eutrophication rates. Although runoff contains pesticides and heavy metals, their impact on the aquatic environment is as yet largely unknown, though recent evidence suggests that the presence of heavy metals decreases the diversity of aquatic biota.

Problems related to water quality degradation resulting from unregulated, or poorly regulated runoff are accelerated erosion of land area and stream banks, sediment deposition in channels, increased flooding, increasing potential for public health problems and deterioration of aesthetic quality. Indeed, the total pollutant loads of stormwater, during storm runoff periods, can exceed by many times that of municipal treatment plants. This condition could very well preclude meeting water quality standards--regardless of the degree of treatment afforded dry weather wastewater flows.

Nature of the Problem

If one word can describe the nature of the urban runoff problem, that word would be variability. For example, the quantity and quality of storm overflows can vary with respect to storm characteristics, antecedent conditions, time, location, degree of urbanization or even other factors.

While stormwater runoff problems may be characterized by their variable nature, the ultimate cause of this pollution may be traced to the activities of man. Four examples are:

1. Fallout from the Air- Fallout or washout from the air contributes substantial amounts of particulate matter. Winds carry dust and dirt into and out of an area, but leave large amounts trapped within the area.

2. Residue from Transportation- Automobiles, trucks, and buses remain a major source of suspended solids, chemical oxygen demanding material, and heavy metals, especially lead.

3. Debris from Man's Carelessness- Street litter--an accumulation of trash--is a major source of organic material.

4. Washoff from Construction- Runoff from urban construction sites, whether it is from new developments, or redevelopment, contributes significant amounts of sediment.

Sediment remains the most common pollutant which results from these activities. It exists ubiquitously in an urban area. Recent evidence indicates that heavy metals, nutrients, and some pesticides may adsorb or cling to sediments.

Concept

The object of nonpoint source controls is to protect the beneficial uses intended for receiving waters. While treatment appears an available means to achieve this end, its cost remains prohibitive. A less costly alternative is, then, to address the sources and causes of pollution. Best Management Practices achieve this goal through the reduction and prevention of pollution. Such is the principal focus of the BMP concept.

Management practices may be divided into two groups: those most useful for existing or developed areas and those more applicable to new or developing areas. Problems of developed areas occur where structures and pavements are in place and where drainage is accomplished primarily through sewering. In the densely populated commercial, and industrial subareas, management techniques such as improved sanitation practices and improved maintenance practices are most effective. Such techniques reduce the amount of pollutants, that can enter the drainage system.

The "preventive" concept best applies to developing urban areas, for these are areas where man's encroachment is minimal and drainage is essentially natural. These areas offer the greatest flexibility of approach in preventing pollution. What is required, therefore, is to manage the development in order to maintain a runoff regime as close to natural as possible. It is in these new areas where proper management practices can prevent long term problems.

The philosophy of flow attenuation underlies the preventive objective of the BMP concept. Flow attenuation, as an approach to controlling the rate of urban runoff, is well documented. It is concerned directly with runoff as it moves over the surface of the urban area to the initial collection system. Flow attenuation, in an hydrologic sense, means to increase the time of concentration and decrease the magnitude of the peak runoff. Less erosion results because reduced runoff velocity reduces the erosion force. Furthermore, with this technique large volumes of water are not allowed to rapidly accumulate at constructions, but flow at reduced rates over a longer period of time, thus diminishing the possibility of localized flooding. Management practices focus on the sources of pollutants and their means of conveyance. The improvement to water quality is a result of reduced loadings to the receiving water.

ment to water quality is a result of reduced loadings to the receiving water.

Management Options

Best management practices, within the urban area, are an integrated approach using source and collection system management. Source management is defined here as those measures for reducing or preventing pollution through good "housekeeping" methods. Examples of "housekeeping" techniques are:

1) Street cleaning,
2) Sewer flushing,
3) Catch basin cleaning,
4) Improved waste collection,
5) Stock pile covering.

Source management addresses the pollutants where they accumulate, before they are washed into the receiving water.

Collection system management, as used here, includes all alternatives pertaining to collection systems which begin from the ground surface and end with the sewer outfall. Examples include devices such as:

1) Detention basins,
2) Recreation lakes,
3) Debris dams,
4) Playground or parking lot temporary storage,
5) Roof tops, and
6) Use of flow separating devices such as the swirl concentrator,
7) In-systems devices such as
    a. Use of existing sewers for storage
    b. In-line tunnels
    c. Addition of polymers
    d. Inflow/infiltration reduction, etc.
8) Groundwater Recharge

Collection system management is concerned with reducing the amount and rate of runoff and in addition, the number of overflows in combined sewers.

Reuse of stormwater should be considered as a management option in those areas of the country that are water deficient. Runoff, from surface storage, can be used for such nonpotable uses as fire fighting or lawn irrigation. Groundwater recharge should be considered where it is practicable, and the quality of the recharging water would not pollute the receiving aquifer.

An integrated approach would include source management to reduce pollutant loads and collection system management to reduce infiltration, overflows, and rate of runoff. BMP's should thus stress both source and collection system management. The management goal is to reduce or prevent pollution in order to meet water quality objectives at a minimum cost.

Developed areas are subject primarily to housekeeping type techniques --reduction of loadings being accomplished by actual sweeping after the fact. Preventive approaches such as increasing percolation into the soil, and attenuating runoff through surface storage, are possible and should be considered when redevelopment occurs. The highest degree of flexibility of approach and probability of sucess is in the developing areas as control can be built into the project. The opportunity to contain the urban runoff problem and avoid long term problems is such that high priority should be given to planning and implementation of management programs in all areas.

Information Sources

Information on load estimating, management techniques, and technology assessment for the reduction and prevention of pollution from urban runoff can be found in the following publications:

1. "Interim Report on Loading Functions for Assessment of Water Pollution from Nonpoint Sources", EPA-Project #68-01-2293, U.S. Environmental Protection Agency, Washington, D.C., 20460, November 1975.

2. "Water Quality Management Planning for Urban Runoff", EPA-440/9-75-004, U.S., Environmental Protection Agency, Washington, D.C. 20460 December 1974.

3. "Practices in Detention of Urban Stormwater Runoff", Herbert Poertner, Office of Water Resources Research and Technology, U.S. Department of the Interior, Washington, D.C., June 1974, NTIS order number: PB 234554.

4. "Water Resources Protection Measures in Land Development - A Handbook", Office of Water Resources Research and Technology, U.S. Department of the Interior, Washington, D.C., April 1974, NTIS order number: PB 236049.

5. "Urban Stormwater Management and Technology - An Assessment", EPA-670/2-74-040, U.S. Environmental Protection Agency, Washington, D.C., 20460, December 1974.

DRAFT
DEC 18 1975

BEST MANAGEMENT PRACTICES TO MINIMIZE WATER POLLUTION DUE TO HYDROLOGIC MODIFICATIONS

Introduction

Many development activities within planning areas necessitate hydrologic modifications as an essential feature. These include (1) channel modifications; (2) construction of dams to impound stream flows; (3) other types of construction activities; and (4) resource recovery operations actually located in streambeds. In addition, there are many land development activities which, if not properly controlled, may result in unintended, and often undesirable, hydrologic modifications. In many instances these activities result in topographic and ground cover changes which could affect surface runoff rates, volume and direction adversely. Such effects are often experienced in areas undergoing rapid urbanization.

Hydrologic modifications may be of local or regional scope, and are being (or have been) implemented in areas extending throughout the nation, affecting both intra-and interstate waterways.

Description of Hydrologic Modifications

Hydrologic modifications resulting in nonpoint source pollution are activities that either directly or indirectly affect, or have affected, the natural stream-flow and associated groundwater regime detrimentally. Pollutants are consequently added to the surface and ground waters from the diffuse runoff, or by seepage or percolation. The levels of many of these pollutants are influenced by climatic events such as rainfall and the seasonal temperature changes, in addition to the effects of soil types and topography, and operating practices. Reference to hydrologic modifications as sources of non-point pollution should not be mis-construed as eliminating them from consideration as point sources with respect to certain aspects, which require control under the NPDES and 404(e) permit programs.

Channel Modifications

Channel modifications are implemented primarily for flood control, erosion reduction or for drainage purposes. Such structural changes as dikes, levees, piers, docks, bridges and road fills may require or result in channel modifications which would not otherwise have occured. There are seven different types of modifications which are potential nonpoint sources of pollutants. They are:

1. Clearing and snagging operations to restore the former hydraulic capacity of a streambed. This is basically a periodic maintenance operation.
2. Channel excavations which enlarge and reshape an existing channel, or which provide a new channel in its place.
3. Channel realignment to eliminate meanders that have developed in the natural streambed.
4. Construction of floodways to relieve the streambed of excessive flows of storm water. These are normally dry.
5. Construction of retarding basins for the temporary storage of excess flows of storm water.
6. Construction of debris retention basins to hold back debris during periods of high water, which might otherwise result in extensive downstream erosion and pollution.
7. Construction of drainage ditches or deepening existing ditches.

Impoundments

Dams are constructed to impound surface waters for water supply, flood control, fish and wildlife, hydropower, navigation, irrigation, flow diversion, low flow augmentation, and combinations of some or all of these reasons. They are usually assigned to one of the two following categories:

1. Run-of-the-river impoundments, which characteristically have low heads and water detention times limited to a few days.
2. Storage reservoirs, which are usually located on tributaries, with high heads, and encompassing an extensive area outside the original channel.

Various Construction Activities

All types of ground-disturbing construction activities result in modifications to existing drainage flows, and if not given adequate design consideration, such hydrologic changes may become sources of water pollution. Construction nonpoint sources of pollution are the subject of a separate guidance document, and will not be covered here in detail. When a construction project includes potential nonpoint sources resulting from hydrologic modifications, those best management practices recommended in that document need to be implemented.

Resource Recovery Operations

The resource recovery activity of primary importance is that of the sand and gravel operation. However, mineral recovery operations of any kind which will disturb the existing streambed must be considered, as well as should oil and gas wells (exploratory and production), located in bodies of water.

Withdrawal and Recharge Activities

Surface and ground water withdrawal and recharge activities may produce undesirable effects such as reducing waste assimilative capacity, damage to fisheries, saltwater encroachment, surface subsidance, induced recharge, and mixing of water in aquifers of differing water quality.

Other Types of Activities

Concurrently prepared best management practices guidelines are available for activities incorporating hydrologic modifications in agriculture, silviculture and other categories, in addition to construction. However, best management practices should be applied for all other activities involving hydrologic modifications, even if they are not specifically identified by guidelines.

Identification of Pollutants

Six general types of nonpoint source pollutants that result from hydrologic modifications are:

1. Sediment- Sediments are one of the most prevalent non-point source pollutants, occurring as a result of most types of hydrologic modification activities to varying degrees. The degree of pollution from sediments will vary with streamflow, snowmelt and rainfall runoff, soil types, and bedload characteristics, and will be most intense during the period when construction activities have removed vegetative cover, until it can become re-established. Since they are a naturally occuring phenomenon, present due to erosional processes, they will normally be evident to some degree even with application of best management practices to control manmade sources. Where the sediments settle, bottom organisms can be smothered, and spawning beds can be destroyed. The increased turbidity during the transport phase will interfere with ligh penetration, hindering photosynthesis, and is a hazard to boaters, swimmers and water skiers. Sediments are also carriers of nutrients and pesticides which may have become adsorbed to their surfaces.

2. Nutrients-Where Hydrologic Modifications located in agriculture-intensive areas result in increase runoff rates and streamflow velocities, the natural level of nutrients may be increased. In urban areas, similar circumstance will increase nutrient levels as a result of fertilization of lawns and gardens, but the amount of increase will be lower. Soil erosion also contributes to the problem by carrying adsorbed nutrients well beyond the areas that would normally be affected.

3. Pesticides- A similar pollution problem may be experienced with respect to pesticides as was described for nutrients, unless integrated pest management has been instituted.

4. Thermal- This form of pollution may result from channel modifications or impoundment construction. Not only is the temperature change that might occur a problem by itself with respect to sensitive aquatic life, but it can lead to serious changes in the dissolved oxygen level in the water body. As an example of the type of problem that might be experienced in channel modification, if the normal tree cover is removed, and the channel is widened to handle design flood flows, the resulting shallow normal flow will be exposed to increased solar radiation, with attendant temperature increases, and a reduced capacity for dissolved oxygen. Impoundments that become stratified during the summer and winter may become oxygen deficient, which can, in turn, cause low dissolved oxygen problems downstream of the discharge.

5. Chemicals - Hydrologic modifications such as dredging, with the attendant necessity to suitably dispose of the spoil, may result in release of pollutant chemicals from the spoil through leaching or percolation. The fines re-suspended in the streambed are another potential source of pollution if adsorbed chemicals are released. Changes in pH and dissolved oxygen levels that may occur in impoundments may cause release into solution of certain types of chemicals previously insoluble. Modifications that lowered the groundwater table sufficiently in coastal areas could result in saltwater intrusion into a freshwater aquifer, with attendant salinity degradation.

Chemical stabilization techniques applied for control of fugitive dust and/or nonpoint source pollution will require coordination. Techniques selected must be complementary, rather than conflicting, with the choice of action selected being that which produces the best total end result, with respect to control of both nonpoint source pollution and fugitive dust.

6. Microorganisms - Modifications could result in pathogenic microorganisms entering the water from runoff or percolation and seepage. Changes in the existing flow regime must consider the effect on potential sources of such organisms.

Considerations For Best Management Practices Selection

Best Management Practices for hydrologic modifications is the most practical and effective measure, or combination of measures, which will prevent or reduce the generation of pollutants, upon implementation, to a level compatible with water quality goals.

The BMP selected for a specific hydrologic modification will not necessarily be the same in different areas of the country. Soil types, topography, climate, existing condition, local zoning and land use regulations, etc., must be considered in assessing the problem. The final determination of which BMP alternatives to apply in any specific case must suit the site conditions, and include appropriate public participation. BMP must be considered at the earliest stage practicable, and throughout the problem identification and analysis planning, design and construction phases.

The principal emphasis should be placed on measures that will prevent, or minimize nonpoint source pollutants which would be generated by the specific hydrologic modification. All preventive measures must be fully integrated into the total management system for every hydrologic modification. In brief, the changes introduced should produce conditions similar to those existing in nature which past experience has proved will effectively control the potential pollutants, and maintain or improve the water quality, while avoiding changes which would be detrimental.

As in other areas of nonpoint source pollution, erosion control measures are an essential feature of most hydrologic modifications. Controlling sediment-bearing runoff will reduce the amount of adsorbed nutrients, pesticides and other chemicals that reach the nation's waters. Designs for modification must recognize this problem and provide suitable construction provisions as a part of the project. (With respect to pesticides, integrated pest management must be given suitable consideration.) Subsequent operation and maintenance activities must continue to apply best management practices to assure the continued success of the pollution prevention measures.

The potential for thermal pollution problems must be assessed for some types of hydrologic modifications, and suitable control measures must be applied. The choice of type of modification may even be determined by the need to control pollution of this type.

Prevention and Reduction Measures

The measures which can be applied to hydrologic modifications to prevent or reduce pollutants from reaching surface or ground waters may be vegetative, structural or institutional or a combination, in addition to those mentioned for agriculture, silviculture, etc., in the documents developed for pollutants related to those activities. Institutional measures relating to land use should not be overlooked, but will be more easily applied in non-urbanized locations. The variety of structural and vegetative control measures will be discussed in detail in applicable sections of this handbook.

DRAFT
31 JAN 1976

BEST MANAGEMENT PRACTICES TO MINIMIZE WATER POLLUTION DUE TO RESIDUAL WASTES

The other nonpoint source categories of agriculture, silviculture, mining, construction, urban runoff, and hydrologic modification often produce residual wastes through their activities. These discarded materials must be properly handled to provide for our health and environmental protection. Our choices in problem solution are limited. Wastes may be disposed of, recovered for some use, or reduced at the source of generation.

Millions of tons of residual wastes are disposed annually, generally by burying or burning and burying; this results in various degrees of environmental harm to air, land and water. Surface and ground water damage result when the pollutants from these residual wastes are conveyed to waters by run-off and infiltration. Using the residual waste generated by wastewater treatment plants as a base factor of one, residential and commercial sources generate about 17 times as much waste as generated by wastewater treatment plants, and industry produces about 35 times the base amount. Agriculture produces 2 1/2 times the waste produced by industry, and mining produces 7 times that amount.

The following guidance is intended to provide information regarding the control of pollution from nonpoint sources of residual wastes and to supplement information regarding control of residual waste pollution associated with discharges regulated under the requirements of NPDES.

Introduction

Residual wastes are defined as those solid, liquid, or sludge substances from man's activities in the urban, agricultural, industrial, and mining environment not discharged to water after collection and necessary treatment. Residual wastes include, but are not limited to:

- Sludges resulting from water and domestic wastewater treatment, industrial processes, utility plant processes and mining processes;
- Solids resulting from industrial and agricultural processes and from nonprocess industrial and commercial activities (demolition wastes, mine tailings, incinerator residues, dredge spoil, crop residues, feedlot wastes, and pesticide containers);
- Liquids resulting from industrial side streams and from agricultural product processing.

Residual wastes must be considered as largely untapped resources with unrealized potentials for beneficial uses. The minimal use of residual wastes has primarily resulted from the traditional consideration of such wastes as a problem rather than as potential assets. The ocean and land have been the final resting places for societies' residues, because they have been the most economical. This attitude has resulted in dumps with few siting considerations, a lack of site maintenance and no emphasis for resource recovery.

As treatment requirements become more stringent with further implementation of the Federal Water Pollution Control and Clean Air Acts, residual wastes will greatly increase and will contain a wider range and greater concentration of pollutants.

Management programs for handling vast quantities of residuals often fall short of providing adequate protection of water quality. Frequently, procedures intended to abate air and water pollution problems worsen residual waste problems. Since residual wastes are the end-product discards of all processes, the management of residual wastes clearly cannot continue to be considered separately from the overall management processes and systems that produce the wastes. Just as the environment -- air, water and land -- must be considered a continuous whole, and be treated as such, residual waste problems cannot be successfully segregated into individual components for separate particularized handling. All considerations must be integrated into a problem-solving approach that will achieve total waste management, on an areawide basis, with emphasis upon (1) recovering the resource values contained in any such wastes, and (2) the satisfactory, sanitary disposal of any element or portion of the residual wastes not amenable to resources recovery processing or without economic value for such processing.

Identification of Pollutants

The types of wastes and their composition have changed greatly over the past three decades, due largely, to changes in lifestyle and to the great diversity of new products on the market. The wastes society generates are conveniently classified into hazardous and nonhazardous. The biological, chemical, and physical actions of the environment can, with unacceptable control measures, act on these residuals to release their hazardous and undesirable constituents to the environment.

Water quality problems which can result from the released waste constituents exceeding the assimilative capacity of the receiving water include: aesthetic deterioration, dissolved oxygen depletion, bacteria/virus contamination, suspended solids, dissolved solids, nutrients, and metals/pesticides/persistent organic toxic compounds. All of the above problems are directly or indirectly associated with precipitation, which provides mobility to the waste constituents.

For the most part, nonhazardous residual wastes are a local or regional problem. The Federal role has been to identify and test possible solutions, with State and local governments responsible for implementation. Hazardous residual wastes are a problem of national scope, with Federal laws controlling the storage and disposal of waste pesticides and containers, and radioactive wastes. This limited Federal authority leaves many gaps in the disposal of hazardous wastes.

Concept of Best Management Practices

While the residual waste situation is technologically, economically, governmentally and socially complex, it can be made to succumb to a sound, results-oriented program of conceptualization, investigation, analysis and evaluation, planning and programming and (most importantly) the exercise of capable leadership and strong resolve to implement areawide programs and systems.

This approach infers that residual waste problems can best be corrected by the implementation of Best Management Practices (BMP) which can be expected to result systematically in flow attenuation of waters, waste stabilization, waste reduction, and resource recovery and recycling. BMP approaches cannot be established and utilized individually, but must be integrated into an overall system for the effective management of residual wastes. Everything works interdependently. Flow attenuation, while reducing entrained run-off pollutants, can actually increase infiltration and increase the requirement for waste stablization. Reducing wastes at the source by preventing the production of wastes, and, at the disposal end, through the resource conservation can either eliminate the residues from many manufacturing processes, before they appear as wastes, or prevent the residuals from coming into extensive, dis-beneficial contact with the environment.

Management Techniques

Many techniques can be applied to the management of residual wastes, and the alternatives can be divided into two general categories:

(1) Innovation. This would include, particularly, the development of source reduction techniques (basically administrative) and systems for the recovery or recycling of residual wastes (basically technological and institutional). Reference must be continually made to the total waste management system, including in-process treatment, or containment procedures.

(2) Application of existing techniques. This would involve the utilization of demonstrated state-of-the-art techniques to remedy problems; basically, this would be an extension of the present process.

A BMP might be included in either of the above categories. However, EPA encourages the first: innovation. Over the long term, the innovative approach will result in accomplishing the greatest source reduction and the greatest recovery of resources, as well as the abatement of pollution. Actually, pollution abatement is achieved almost as a by-product of the innovative process.

However, both approaches are equally amenable to standard administrative and regulatory practices. The end goal of the approach should be to provide sufficient reduction in pollutants to enable the meeting of designated water quality objectives at minimum cost.

Any BMP should consider that cost considerations are vital and that treatment alternatives will be used only when lower cost alternatives fail to provide the required reduction in pollutants. The greatest degree of freedom in alternative selection will be under new source conditions where existing decisions and capital investments will not be overriding factors. These new source condition controls will permit the greatest short-term accomplishment. The implementation of BMP's under existing source conditions cannot be accomplished overnight. The key to successful existing condition control is orderly transition. It is necessary that any action be phased in over time in such a way that adverse consequences are minimized or eliminated. The BMP concept must recognize that capital investments and individual's jobs must be counted and no change should be implemented until all the benefits and costs have been weighed. These criteria must be weighed against the urgency of water quality requirements and objectives, which are insistent that certain ameliorating actions be taken.

Solutions, under a BMP, should be directed toward meeting the following key needs:

- the need to design a workable, flexible system;
- the need to use, establish, or modify appropriate institutional arrangements (laws, organizations, processes);
- the need to reduce uncertainties, promote actions to implement;
- the need to establish a sense of urgency, improve schedule;
- the need to establish a process of continuous improvement through research and development in the local area;

- the need to help people get started on a coordinated basis -- incentivization;

- the need to give adequate attention to all public information and education programs.

Any BMP must meet certain general and specific criteria. General criteria are provided in the States Water Quality Management Guidelines. The specific criteria for a residual waste BMP follow:

Geographic Situation

The geology of our country can vary widely over short distances, resulting in numerous soil types and hydrologic profiles. Residual waste disposal and use alternatives must consider these variables as they determine the mobility of waste components in this underground portion of the environment. Topography of the sites (terrain slope, type of surface covering and distance between surface hydrological features) affects waste component mobility. The BMP must examine these variables to prevent waste from being transferred between environmental structures, ultimately impacting water quality objectives.

Meteorological Conditions

The frequency, intensity, and duration of precipitation within and outside of the site will affect the surface water infiltration and material deposition and movement. Precipitation can be in a number of forms, but rain and snowmelt account for the major volumes. The ambient temperature can determine the rate of snowmelt and the biological activity of a site. The absolute humidity as it affects biological activity and physio-chemical alterations of nonconservative waste components can make new products that are more or less environmentally toxic and mobile than the parent material. As meteorological activity can directly affect water component mobility, the BMP must be compatible with these environmental influences.

Demographic Conditions

The practicability of certain BMP's can depend upon high densities of population or industry(ies) being present or absent in a given area. Frequently, there are critical limits at which resource recovery and waste reduction become feasible alternatives. Also, as mentioned earlier, capital investment and individuals' jobs must be weighed when considering implementation of a given BMP.

Socio-Political Infrastructure

The BMP must address more than the residual wastes, their composition and their movement, and the technical or technological problems of their management. Any waste management system that is handling a problem as pervasive as the management of residual wastes must be inlaid into a socio-economic and socio-political "envelope" that has its own problems in dealing with the type of management system that will ultimately emerge for the management of residual wastes. These problems will include the development of areawide (regional) resolve to implement, and a structure and process through which management may be exercised. Developing these programmatic elements in the face of interlocal/intergovernmental political and economic rivalries,and the social differences that may occur within a given region calls for the development of new patterns for working together, new programs for promoting public understanding and reducing public apathy,and the devising of such instruments of public policy as strong local and State legislation to establish viable structure and process and reduce marketing uncertainties.

The following specific examples of alternative strategies are provided for planning purposes only. They are not recommendations. Use of any one or more of these specific examples should be based upon a comprehensive, areawide, interdisciplinary investigation and the development of specific recommendations from the data.

Source Reduction

The source reduction strategy involves techniques which are basically legislative and administrative in nature. Examples include:

- Design and use of products that live longer.
- Design and use of products which have less material weight.
- Monetary incentives (beverage container deposits).

Resource Conservation

Source Separation and Centralized Processing. The source separation strategy involves a system of low technology techniques. Examples include:

- Separation of waste materials in the home
- Separation of waste materials at commercial establishments.
- Separation of waste materials at industrial establishments.

The centralized processing strategy involves high technology, capital-intensive systems. Examples include:

- Fuel (solid, gas, liquid) and material (ferrous and nonferrous metals, glass) recovery plants.
- Energy conversion facilities (retrofits, new boilers).
- Material conversion facilities (de-tinning plants, minimills, glass products plants, smelters).
- Transportation systems.

Disposal

The disposal strategy generally involves low-technology systems. Examples include:

- Construction and demolition waste;
- Lined lagoon and landfill
- Waste stabilization;
- Landfill stockpiling for potential future recovery.

Information Sources

EPA has published numerous reports describing methods for management practices and preventive techniques for the control of residual wastes resulting from man's activities. Many of the practices described above are discussed in some detail in the following publications. This listing is by no means exhaustive and the user is encouraged to look further.

- Residual Waste Management Research and Planning Projects, EPA-WPD 09-75-01, September 1975.
- Sludge Processing, Transportation and Disposal/Resource Recovery: A Planning Perspective; EPA-WPD 12-75-01, December 1975.
- Interim Report on Loading Functions for Assessment of Water Pollution From Nonpoint Sources, EPA Project No. 68-01-2293, November 1975.
- Development of Residual Management Strategies EPA 600/1-76-01, January 1976.
- Residual Waste-Best Management Practices Handbook, EPA-WPD 02-76-01, February 1976.

Additional information regarding institutional structures and methods of implementation will be provided in later publications.

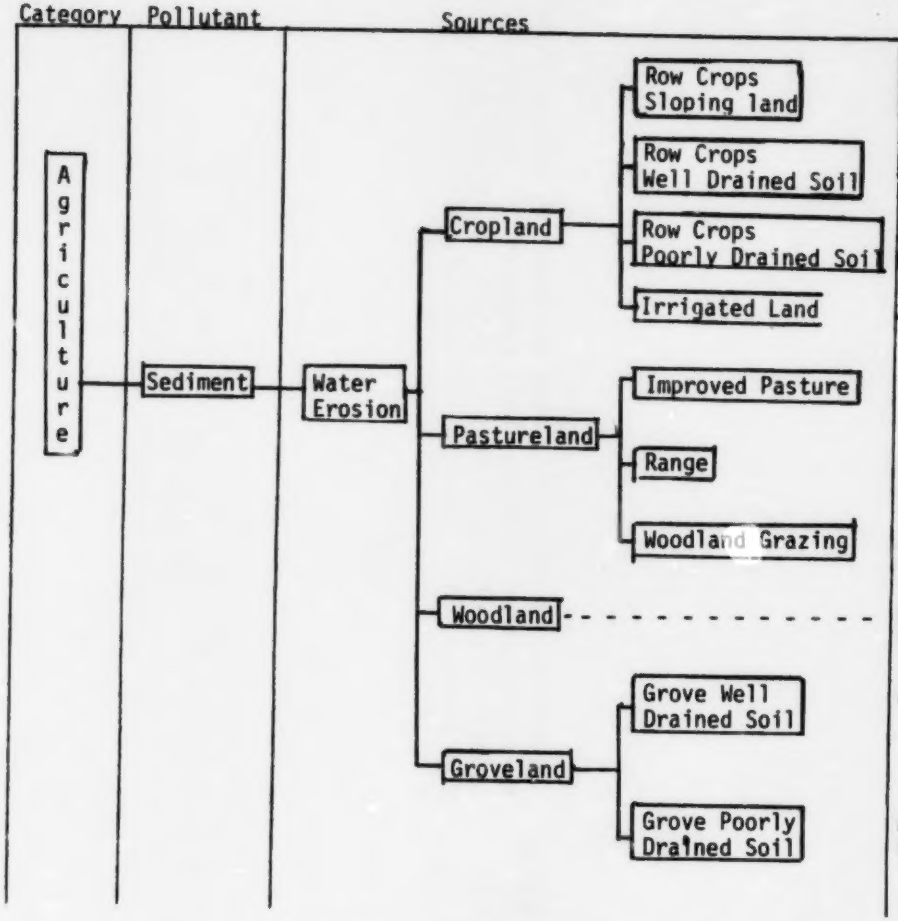
APPENDIX 11-2

BEST MANAGEMENT PRACTICES SELECTION BY SOURCE CATEGORY

Source: Adapted from a chart developed by Robert M. Craig, State Resource Conservationist, Soil Conservation Service, Gainesville, Florida; Louie P. Heard, Environmental Coordinator, Soil Conservation Service, Gainesville, Florida

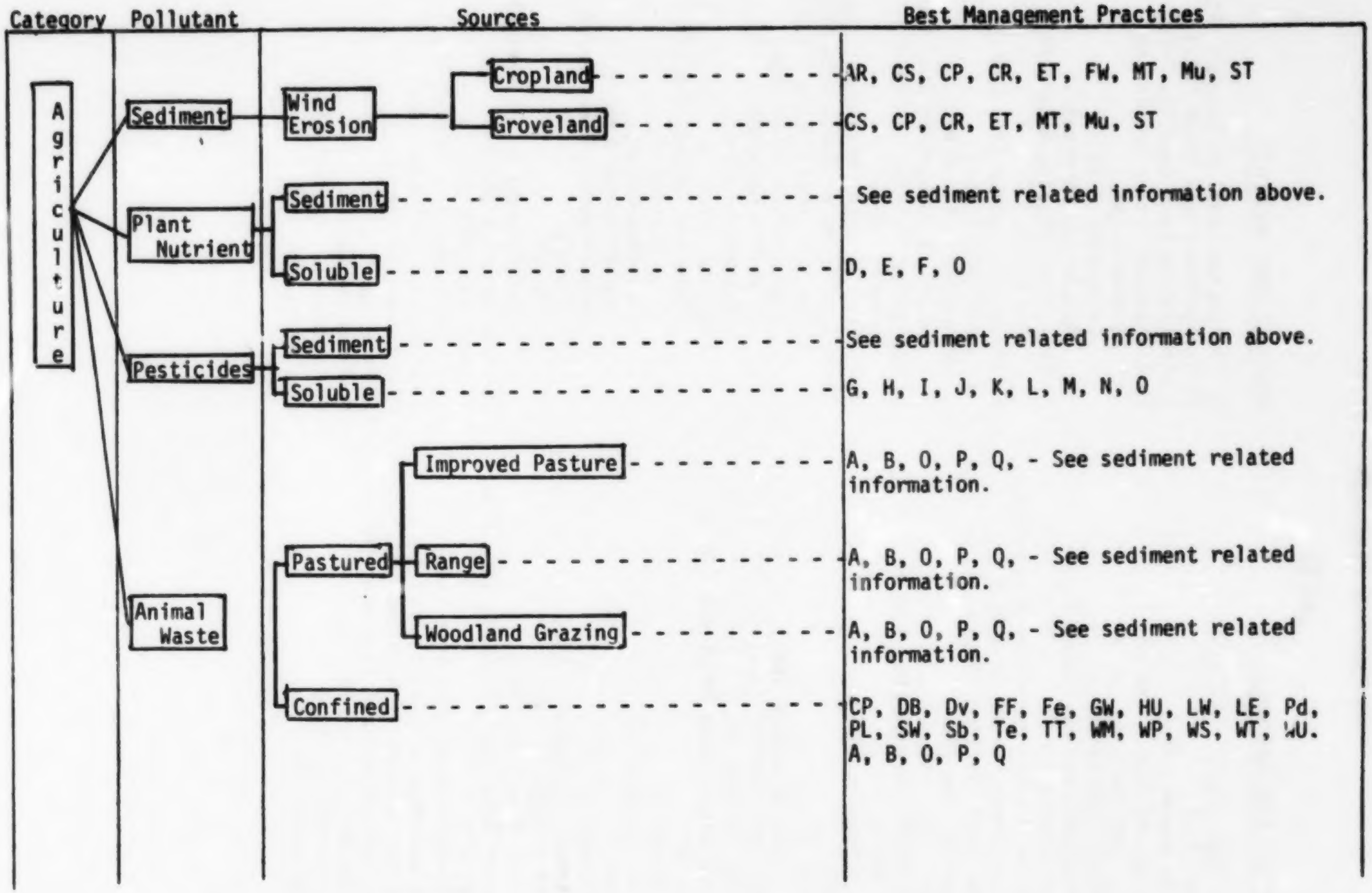
AGRICULTURAL NON-POINT SOURCE

BEST MANAGEMENT PRACTICES



Category	Pollutant	Sources			Best Management Practices*
Agriculture	Sediment	Water Erosion	Cropland	Row Crops Sloping land	AR,CS,CF,CC,CP,CU,DB,Dv,FB,GS,GW,GR,LW,MT,Mu,St,SW,SM,Te
				Row Crops Well Drained Soil	AR,CS,CF,CC,CP,CU,DB,Dr,FB,GS,GW,GR,LW,MT,St,SW,Te
				Row Crops Poorly Drained Soil	AR,CS,CF,CC,CP,CU,DB,DS,Dr,DL,FB,GS,GW,GR,LS,LW,MT,St,SW,Te
				Irrigated Land	AR,CS,CC,CU,DB,Dr,FB,GS,GW,GR,IC,ID,IL,IR,Iv,IS,IT,IM,IC,LS,LW
			Pastureland	Improved Pasture	AR,CP,DD,DM,DB,Di,Dv,FF,Fe,GS,IS,IM,PM,PP,Pi,PS,Pd,Pl, ST,SC,SP,SW
				Range	AR,CP,DD,DM,DB,Di,Dv,FF,Fe,Db,GS,GM,Pi,PS,Pd,PL,PU,RS,SD,ST,SC,SP
				Woodland Grazing	AR,CP,DD,DM,DG,Dv,Fe,Fb,GS,GM,Pi,PS,Pd,PL,PB,PW,RS,SD,ST,SC,SP,SW
			Woodland		AR,CP,Fe,Fb,GS,GW,SC,SP,SW,TP,WD,WI,Wp,Wd,Wi
			Groveland	Grove Well Drained Soil	AR,CS,CP,CU,DB,Dr,GS,GW,IS,IM,PM,Pd,PL
				Grove Poorly Drained Soil	AR,CS,CP,CU,DB,Dv,DS,DL,GS,GW,IS,IM,PM,Pd,PL

*See the legend for the names of the BMP's. These and other practices should be considered by the landowner or operator and a professional conservationist when developing a water quality management plan for the individual farm or ranch. Information and technical assistance for planning, designing, and applying BMP's is available from soil and water conservation districts and agencies assisting them.



Category	Pollutant	Sources		Best Management Practices
Agriculture	Sediment	Wind Erosion	Cropland	AR, CS, CP, CR, ET, FW, MT, Mu, ST
			Groveland	CS, CP, CR, ET, MT, Mu, ST
	Plant Nutrient	Sediment		See sediment related information above.
		Soluble		D, E, F, O
	Pesticides	Sediment		See sediment related information above.
		Soluble		G, H, I, J, K, L, M, N, O
	Animal Waste	Pastured	Improved Pasture	A, B, O, P, Q, - See sediment related information.
			Range	A, B, O, P, Q, - See sediment related information.
			Woodland Grazing	A, B, O, P, Q, - See sediment related information.
		Confined		CP, DB, Dv, FF, Fe, GW, HU, LW, LE, Pd, PL, SW, Sb, Te, TT, WM, WP, WS, WT, WU. A, B, O, P, Q

SOIL CONSERVATION SERVICE
CONSERVATION PRACTICES

LEGEND

PRACTICE NAME AND UNIT

- AR-Access Road (Ft.)
- Bd-Bedding (Ac.)
- BM-Brush Management(Ac.)
- CS-Chiseling and Subsoiling (Ac.)
- Cl-Clearing and Snagging (Ft.)
- CP-Commercial Fish Ponds (Ac.)
- SC-Conservation Cropping System (Ac.)
- CF-Contour Farming (Ac.)
- CO-Contouring Orchard and Other Fruit Area
- CC-Cover and Green Manure Crop(Ac.)
- CP-Critical Area Planting (Ac.)
- CU-Crop Residue Use (Ac.)
- DD-Dam, Diversion (No.)
- DM-Dam, Multiple-Purpose (No. & Ac.Ft.)
- DB-Debris Basin (No.)
- DG-Deferred Grazing (Ac.)
- Di-Dike (Ft.)
- Dv-Diversion (Ft.)
- DS-Drain System Structure (No.)
- DL-Drainage Land Grading (Ac.)
- ET-Emergency Tillage (Ac.)
- FF-Farmstead and Feedlot Windbreak (Ac.)
- Fe-Fencing (Ft.)
- FB-Field Border (Ft.)
- FW-Field Windbreak (Ft.)
- Fb-Firebreak (Ft.)
- FR-Fish Raceway (Ft.)
- FS-Fish Stream Improvement (Ft.)
- FM-Fishpond Management (No.)
- FD-Floodwater Diversion (Ft.)
- Fl-Floodwater Retarding Structure (No. & Ac.)
- Fy-Floodway (Ft.)
- GS-Grade Stabilization Structure (No.)
- GW-Grassed Waterway or Outlet (Ac.)
- GR-Grasses and Legumes in Rotation (Ac.)
- GM-Grazing Land Mechanical Treatment (Ac.)
- HU-Heavy Use Area Protection (Ac.)
- HP-Hedgerow Planting (Ft.)
- HD-Hillside Ditch (Ft.)

PRACTICE NAME AND UNIT

- IC-Irrigation Canal or Lateral (Ft.)
- ID-Irrigation Field Ditch (Ft.)
- IL-Irrigation Land Leveling (AC.)
- IR-Irrigation Pit or Regulating Reservoir (No.)
  - (Irrigation Pit)
  - (Regulating Reservoir)
- Iv-Irrigation Storage Reservoir (No.&Ac.Ft.)
- IS-Irrigation System (No. & Ac.)
  - Drip (No. & Ac.)
  - Sprinkler (No. & Ac.)
  - Surface & Subsurface (No. & Ac.)
- IT-Irrigation System, Tailwater Recovery (No.)
- IM-Irrigation Water Management (Ac.)
- IC-Irrigation Water Conveyance (Ft.)
  - Ditch and Canal Lining (Ft.)
    - (Nonreinforced Concrete)
    - (Flexible Membrane)
    - (Galvanized Steel)
  - Pipeline (Ft.)
    - (Aluminum Tubing, Plastic Tape Coated)
    - (Asbestos-Cement)
    - (Nonreinforced Concrete)
    - (High Pressure Underground Plastic)
    - (Steel)
    - (Reinforced Plastic Mortar)
- LC-Land Clearing (Ac.)
- LS-Land Smoothing (Ac.)
- LW-Lined Waterway or Outlet (Ft.)
- LE-Livestock Exclusion (Ac.)
- MT-Minimum Tillage (Ac.)
- MD-Mole Drain (Ft.)
- Mu-Mulching (Ac.)
- OR-Obstruction Removal (Ac.)
- OC-Open Channel (Ft.)

PRACTICE NAME AND UNIT

PM-Pasture and Hayland Management (Ac.)
PP-Pasture and Hayland Planting (Ac.)
Pi-Pipeline (Ft.)
PG-Planned Grazing Systems (Ac.)
Pd-Pond (No.)
PL-Pond Sealing or Lining (No.)
    Flexible Membrane (No.)
    Soil Dispersant (No.)
    Bentonite (No.)
    Cationic Emulsion - Water-Borne Sealant
    Asphalt Sealed Fabric Liner (No.)
PB-Prescribed Burning (Ac.)
PU-Proper Grazing Use (Ac.)
PW-Proper Woodland Grazing (Ac.)
PD-Pumped Well Drain (No.)
PC-Pumping Plant for Water Control (No.)
RS-Range Seeding (Ac.)
RM-Reclamation of Surface Mined Land
RI-Recreation Area Improvement (Ac.)
RL-Recreation Land Grading and Shaping (Ac.)
RT-Recreation Trail and Walkway (Ft.)
RW-Regulating Water in Drainage Systems (Ac.)
RB-Rock Barrier (Ft.)
RA-Row Arrangement (Ac.)
SS-Spoilbank Spreading (Ft.)
SD-Spring Development (No.)
ST-Stock Trails and Walkways (Ft.)
SC-Stream Channel Stabilization (Ft.)
SP-Streambank Protection (Ft.)
St-Stripcropping, (Ac.)
    Contour (Ac.)
    Field (Ac.)
    Wind (Ac.)
SW-Structure for Water Control (No.)
SM-Stubble Mulching (Ac.)
Sb-Subsurface Drain (Ft.)
Sv-Surface Drainage (Ft.)
    Field Ditch (Ft.)
    Main or Lateral (Ft.)
Te-Terrace (Ft.)
TR-Toxic Salt Reduction (Ac.)
TP-Tree Planting (Ac.)
TT-Trough or Tank (No.)
VD-Vertical Drain (No.)
WM-Waste Management System (No.)
WP-Waste Storage Pond (No.)
WS-Waste Storage Structure (No.)
WT-Waste Treatment Lagoon (No.)
WU-Waste Utilization (No. & Ac.)
Ws-Waterspreading (Ac.)
We-Well (No.)
WH-Wildlife Upland Habitat Management (Ac.)
WF-Wildlife Watering Facility (No.)
WW-Wildlife Wetland Habitat Management (Ac.)
WR-Windbreak Renovation
WD-Woodland Direct Seeding (Ac.)
WI-Woodland Improved Harvesting (Ac.)
Wd-Woodland Improvement (Ac.)
Wp-Woodland Pruning (Ac.)
Wi-Woodland Site Preparation (Ac.)

OTHER MANAGEMENT PRACTICES (NOT SCS CONSERVATION PRACTICES)

A--Water Supply Dispersal
B--Salt, Mineral and Feed Supplement Site Location
C--Artificial Barriers
D--Timing and Placement of Fertilizers
E--Slow Release Fertilizer
F--Soil Testing and Plant Analysis
G--Correct Usage of Pesticides
H--Correct Pesticide Container Disposal
I--Correct Application of Pesticides
J--Reduce Volatilization of Pesticides
K--Cultural Practices Effect Pest Life Cycle
L--Biological Control
M--Insect Attractants
N--Resistent Crop Varieties
O--Land Absorption Areas and Use of Wetland Systems
P--Filter Strips Adjacent to Water Courses
Q--Location of Shaded Areas